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A method for analyzing census data from small populations : developed, tested and applied to a 1958 census of Suba barrio, Paoay, Ilocos Norte, the Philippines

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AN ABSTRACT OF THE THESIS OF Stephen Aulick Million for the Master of Arts in Anthropology, presented August 13, 1974.

Title: A Method for Analyzing Census Data from Small Populations: Developed, Tested and Applied to a 1958 Census of Suba Barrio, Paoay, Ilocos Norte, The Philippines

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As part of his anthropological fieldwork, in January 1958 Daniel J. Scheans took a census of Suba, an Ilokano barrio in Paoay, Ilocos Norte, the Philippines. The purpose of the thesis was to use the Suban data to develop, describe and test a method for analyzing census data for

small populations (1000 or fewer persons).

The method was to be complete, to generate as much information as possible based on the data collected, to expose weaknesses and gaps in the data collected and in the data collection procedures, to aid future census-takers in structuring the content of and procedures for taking a census, to be computerized for speed and ease of analysis and adjustment, and to furnish data sufficiently free from methodological variations to allow meaningful comparisions of different populations.

The method developed appears to fulfill these purposes, in part illustrated by certain unexpected findings concerning the Suban population of 511. The barrio had an exceptionally high sex ratio, in a province with the second lowest sex ratio in the country. In keeping with provincial trends, Suba had much lower fertility than in the nation as a whole. The method supported an inference that the pattern of migration in and out of Suba may be changing. The involvement of Suban households in multiple economic avenues, highlighting the general economic strategy of diversification, was also revealed. The analysis also confirmed Scheans' impression that for the most part Subans did not give accurate economic information.

Based on this test of the method and the substantive findings concerning Suba, it is recommended that (a) standard census-taking procedures and forms for small

populations be developed, (b) a center with a trained staff familiar with the method, computer programming and census-taking in small populations be established, (c) a new census of Suba be taken to refine the method and to correct errors in the analysis of the Suban population, and (d) further social, economic and geographic studies of Suba and its population be undertaken.

A METHOD FOR ANALYZING CENSUS DATA FROM SMALL POPULATIONS: DEVELOPED, TESTED AND APPLIED TO A 1958 CENSUS OF SUBA BARRIO, PAOAY, ILOCOS NORTE THE PHILIPPINES

by

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CHAPTER I

INTRODUCTION

The primary purpose of this thesis is to develop a method for analyzing census data from small populations.[1] The method is tested by using census data from Suba, an Ilokano barrio of Paoay, Ilocos Norte, the Philippines. The secondary purpose of this thesis is to present the results of an analysis of the Suban data. The results include a demographic profile of Suba, an interpretation of household economic strategies and suggestions for additional useful data. I also make an attempt to compare the results of the analysis of the Suban data to information available on the Philippine population as a whole.

Daniel J. Scheans took the census of Suba in January, 1958, by household survey using a translator-field assistant. Scheans was new to the Suban area; the major part of his professional training had been in non-demographically oriented areas of sociology and anthropology. For these reasons he did not collect all of the information on the Suban population which an analyst would want. For example, the dates of events such as births, marriages and deaths

[1]A small population is tentatively defined as one with fewer than 1000 persons. The method can be expanded to accommodate larger populations, however.

were not collected, although with accurate age estimates for living Subans, the year of birth could be derived. In some respects this thesis represents an attempt to salvage the Suban census, i.e., to learn as much as possible from the information which was actually collected. This information includes the age, sex, marital status, religion and occupation of individuals and the size, composition, income and economic resources of households.

A method for analyzing census data from small populations is useful for several reasons. The method becomes a guide to the kind of information a field worker should collect. If the field worker so desires, he can code the data while in the field. If preliminary results can be conveyed to the researcher while he is still in the field, he has an opportunity to direct further investigations suggested by these results. The method can illuminate the completeness and accuracy of the data. For example, the results of the analysis of the Suban census confirmed Scheans' impression that the information on household incomes and resources is not very reliable. The method also directs the field worker's attention to areas in which knowledge of the population is deficient, as well as highlighting relevant information about the population.[2] The method facilitates

[2]Relevant is used in the sense that the information forms the basis for useful ethnographic, economic or demographic insights into the structure of the population.

comparisons among populations by eliminating variations in the results of census analysis which the use of different methods might induce. Although the method presented in this thesis is primarily suited to analyzing populations similar in economic structure to the Suban population, the method can be adapted to suit the emphasis which the field worker desires. These purposes demonstrate the necessity for, and utility of, a useful and thorough census method. The analysis of the Suban data shows the extent to which the method presented fulfills these purposes.

The utility of a method can be judged in three ways. The method should reflect the reliability and completeness of the raw data. The method should enable the researcher to analyze the data as thoroughly, accurately and completely as possible. Finally, the method should support the most detailed comparisons among populations which the different sets of data can justify.

Standard demographic analysis underlies the method proposed in this thesis (Barclay 1958; Weiss 1973). I assume that demographic analysis provides a meaningful framework for analyzing a population. I also assume that census-taking and demographic analysis can reveal information of real or potential ethnographic significance. The ethnographic theory which underlies this thesis is Eggan's (1954) theory and method of controlled comparison. This theory rests on the assumption that limiting the scope of an

investigation demonstrates more clearly the nature and extent of the differences and similarities between the things being compared. The proposed method allows the scope of the investigation to be varied. Here, it is limited to demographic and economic analysis. The researcher may limit it further to populations of roughly equal size or ones dependent on similar economic activities. The method may be limited to the same population over a period of time. These limitations on the scope of the inquiry should reveal information and provide conclusions which a broader scope would not reveal or could not justify.

This thesis is presented in three basic parts. Chapter II discusses the method developed for this thesis. It explains how the data were recorded on census sheets and how they were coded onto computer cards. The remainder of the Chapter explains the computer programs, and it illustrates how these programs can be adapted for analyzing other populations. Chapter III presents and discusses the results of the analysis of the Suban census. In Chapter III, I also analyze the "reliability of economic information."[3] In Chapter IV I interpret and judge the method developed. The appendices present a sample census data sheet, the master sheet for coding the data and a copy of the coded data.

[3]Reliability is basically intended to measure how truthful informants were when they provided economic information.

CHAPTER II

METHODS AND PROCEDURE

I. THE SUBAN DATA

Collection of Census Data

Using a translator-field assistant Scheans interviewed informants from each household in Suba. For some households Scheans obtained extensive information, including a list of all household possessions. Nevertheless, I focused the analysis on information generally available from all households. Scheans collected the relevant demographic data on each of the individual members of the Suban population; however, he did not record the dates of marriages, births or deaths. This omission makes it more difficult to estimate the rates of change or occurrence of these events. It also makes the estimates more speculative.

It is Scheans' impression (personal communication) that the data are accurate, with the exception of the information on household economics. Despite some apparent age errors, I assume the data are accurate. Scheans did not attempt to crosscheck the information he obtained to confirm his impression of its accuracy. No records were available to do this, and Scheans had other interests he wished to pursue in the limited time he was engaged in field work in

Suba.

Format of Census Data

I obtained the census data in the form of a loose-leaf notebook containing census data sheets. The data from each household were summarized on a two-page form, a sample of which is included as Appendix A. The data were presented in a standardized format, facilitating coding onto computer cards.

Any method changes the format in which information is presented. Often, the method presented here merely accumulates information and summarizes it in a table. For example the size of each household was recorded, and all of this information was collected and is presented in a table showing the distribution of household sizes. Output which involved any arithmetical computation is often based on estimates. It must be viewed with caution based on an awareness of the computation procedures and an awareness of the accuracy, completeness and quantity of the information on which it is based. For example, estimates of the birth rate are based on the number of children born during a defined period to a defined group of females. The estimates require knowledge of when and how many living and deceased children the defined females bore. It assumes that the group of females is accurately defined and known. Incomplete or inaccurate information in any of these areas produces some error in the birth rate estimate. I do not discuss the actual computa-

tions when the output variables are standard demographic measures, since I assume a familiarity with these measures. Otherwise, I discuss the computations involved. This discussion gives the reader an idea of the kinds of errors in the raw data which affect the accuracy of the variable, and it emphasizes the changes which the raw data undergo in the process of reaching the results as presented.

II. CODING THE CENSUS DATA

Development of Codes

I devised a series of codes based on the data available from the census data sheets. There had been an attempt in 1965 to code the data, but that code was largely discarded. Each code category deals with a specific piece of information. Alternative responses to each specific piece of information were assigned a number. For some of the categories the alternatives were readily apparent. For example, every person in Suba lives in one of four sitios, or hamlets, each of which was assigned a different number. I assigned each category a specific place on the field of a computer card. The proper number was recorded in the appropriate place on IBM FORTRAN coding sheets for each individual. Once I had coded information on approximately one-third of the individuals and households, I revised the coding system. Two codes were eliminated; one was added. I revised the scales for assigning numbers to the alternatives for several

of the economic codes, i.e., ones dealing with fishing, animals, land and income. I added alternatives to many of the other codes. At this point I recoded the information on the previously coded individuals and households using the new coding system. The final code system is included as Appendix B. Then I completed the task of coding information onto the coding sheets for the remainder of the individuals and households.

At this point I spent several hours in the computer center punching the numerically coded data onto computer cards. A computer program was written[1] which yielded a printout of the information on the cards to enable me to check the accuracy of the coding. Once the errors were eliminated, the pack of data cards was duplicated with the assistance of another computer program. Appendix C is a printout of the coded information on individuals, which includes information coded in columns one through fifty-two. Appendix D is a printout of columns fifty-three through seventy-seven, information about each household.

Explanation of Codes

Most of the codes are self-explanatory; nevertheless, several of them require some comment. The substantive meaning of many code categories is explained in the next chapter

[1]The program was written by Dr. Marc R. Feldesman, who assisted me throughout my work on this thesis with the problems I had with the computer.

where the results are presented. I gave each household (columns 1 and 2) and each individual (columns 3, 4 and 5) a code number, although these numbers are never used in the computer analysis. However, they aided me in coding the data and provided considerable assistance in sorting or analyzing the cards by hand. For larger populations, where five columns would be insufficient to record both and household and individual numbers, it is recommended that only an individual code number is used.

Year Born. Only three columns (12, 13 and 14) are used to code the year born, since adding the fourth column would be repetitious. Even after the year 2000, only three columns will be needed until census data cover a 1000-year span. The computer can be instructed to distinguish between the individuals born in the respective milleniums.

Whereabouts. The code for column 19 was solely designed to indicate whether the individual was in Suba at the time of the census. Residency is reflected in column 45.

Migration. The alternatives for the category of when new Subans immigrated is coded in column 23 as follows. A "0" is assigned to anyone who was a child when he immigrated, invariably with his family. Young adults move into Suba for a variety of reasons. Frequently, the purpose is to marry a Suban. These people are assigned "2". Young immigrants who enter for other reasons are assigned "1". Adults who immigrate with their families are assigned "3". Older persons

whose children and spouse have died sometimes emigrate to join relatives in another barrio. Those entering Suba for this reason are assigned "4".

Fertility. The information coded in columns 28 through 34 pertains only to females who have attained child-bearing age. There is no category for the total number of children a female has borne. One category records the number of living children (column 28) with "0" assigned to all women with ten or more living children. There is an identical category to record the number of deceased children (column 29). Although large families are not uncommon, only one female had over nine living children. She had eleven.[2]

Status in House. It is desirable to have some means of distinguishing among the members of a household by their relationship to one another and to the household. The category in column 45 attempts to achieve this purpose. The househead and the resident members of his family are coded "0". If one of these persons was absent at the time of the census, although normally a resident of the household, he is coded "1". Members of the household who are not relatives of the househead are coded "2". Codes "3" and "4" concern deceased members of the household, "3" for a deceased spouse of the househead and "4" for a deceased child of a female in the household. Codes "5" and "6" apply to relatives who are

[2]Household "45", individual "288" on p. 155 of Appendix C.

not members of the household. If the relative is expected to contribute to the household income, he is assigned "5". Most of these people can be expected to return to the household eventually. Alternative "6" codes emigrated children of female members of the household.

Family Size and Type. The total number of persons living in the household is only coded in column 47. A "0" designates a household of ten or more members. Four households are coded "0". Two had ten members each, and the other two had eleven members each. This information is only coded on the card of the househead.

The category for domestic family type is unnecessarily complex (columns 48 and 49). A "0" codes a nuclear family. These families often have relatives, or occasionally non-relatives, living with them. Codes "01" through "08" distinguish among the relationships of the additional individual(s) to the family. Codes "14" through "19" indicate at least two extra persons living with the nuclear family. The two types of joint families are coded by "09" and "10". The remaining households, represented by "11" through "13", are headed by an unmarried person. As for household size, family type is only coded on the card of the househead.

Tenancy. A Suban household's relationship to the land can be quite complex. A household can work its own land, work land as tenants and/or be landlords (column 53). Ones which are not involved in any of these activities are coded

"0". Households which own and tenant land are coded "1", while those which only tenant are coded "3", and those which only work their own land are coded "7". Households which work some of their own land and are landlords for the rest are coded "4", while if the household is only a landlord, the code is "5". Households which work land to which they have an ownership claim, e.g., an expected inheritance, but to which they do not yet have full claim are "part owners," code "6". Households which tenant land and are landlords for other land are coded "2".

Fishing. If a household which owned fishing gear attempted to make any income from fishing, it is coded "2" in column 56. Owning some gear, code "1", implies that the household fishes for home consumption only. Both the monthly income from fishing and the value of the gear are recorded on the census data sheets for only a few households (columns 57, 58). From the households for which both are known, I determined that the value of the fishing gear a household owns is roughly five times the expected monthly income. Since most households which fish for income indicated either the value of their gear or their monthly income, the other figure could be derived easily.

Animals. Frequently a household informant would give the animal holdings without assigning any particular value to each animal or to the entire group. Several households did assign values to the various animals they owned. There

were enough of these households to provide the basis for developing estimates of the average value of each kind of animal which are shown in Table I.

TABLE I.

AVERAGE VALUE IN PESOS OF ANIMALS OWNED BY SUBAN HOUSEHOLDS

Animal	Value
Nuang (carabao or water buffalo)	
Bull	₱ 250
Cow	150
Calf	75
Baca (Cattle)	
Bull	200
Cow	100
Calf	50
Baboy (Pig)	
Adult	30
Young	10
Calding (Goat)	15
Manok (Chicken)	
Adult	2
Chicks (5)	1
Aso (Dog)	4

Animal tenancy is common in Suba (column 69). The tenant household which raises the animal may own most of the

animals it raises (code "1"), or it may raise more animals for others than it owns for itself (code "2"). Similarly, the owners of the animals may let other people raise most of the animals they own, code "4", or they may raise most of the animals themselves, code "3".

Economic Indices. The diversity of economic activity is the number of kinds of animals, trees and crops a household raises (columns 71, 72). Income in the numbers of cavans (columns 73, 74) is the reported or estimated yearly rice income in cavans of palay.[3]

Reliability of Economic Information. The "reliability of economic information" is a category which I developed to measure the accuracy of the economic data. Scheans questions the accuracy of this data, especially as it relates to landholdings and rice income. To measure accuracy, the total yearly income of the household is compared to the yearly income necessary to survive at minimum subsistence levels. The reported income and the necessary minimum income have to be to the same scale if they are to be compared. The scale used is rice consumption in cavans of palay per person per year.

Several authorities have estimated the necessary minimum income in unhusked rice for a family of five for one year. Some of these estimates appear in Table II.

[3]A cavan of palay, or unhusked rice, is 75 liters and weighs about 100 pounds.

TABLE II

ESTIMATES OF THE YEARLY RICE CONSUMPTION REQUIREMENTS OF A FAMILY OF FIVE IN CAVANS OF PALAY

Source	Estimate
Hanks (1972)	18.5 cavans
Lava (1938)	
text at page 61	15
text at page 74	30
Nydegger and Nydegger (1966)	33
Scheans (1965)	19
Takahashi (1970)	24

It is apparent from the Table that Lava contradicts his own estimates. Fortunately, he also provides consumption figures for twelve families of five in Ilocos Norte and Ilocos Sur for periods ranging from forty-five to sixty-one days. Lava's figures indicate that a family of three adults and two children with a diet of 67% rice needs 6.9 cavans of palay for one year. This amount provides the adult male worker with 1400 calories a day. The calorie consumption figure includes all other food sources. The figure of 6.9 cavans is much lower than all of the estimates in Table II. Since the calories provided by this level of consumption are so low, I assume that the consumption figures are from families living at minimum subsistence levels. Lava confirms this impression. Adjusting slightly for other food sources, I assume that a family of five requires a total income

equivalent of 7.5 cavans of palay per year to survive at minimum subsistence levels, or 1.5 cavans of palay per person per year.

Income in Suba comes in four basic forms: rice, other foods, money and barter. Since barter rarely provides food for the household, it is ignored for the purposes of determining reported income. Since rice income is reported in cavans of palay per year, no conversion is necessary.

Monetary income is converted to a scale of rice income by determining how much rice the money could buy. The Philippines Free Press indicated in February, 1958 that a ganta[4] of husked rice was selling for between ₱1.20 and ₱1.60 in Manila. The paper said that the price was probably higher in the provinces. Using the city prices, a cavan of husked rice cost between ₱30 and ₱50. Since it takes just over two cavans of palay to produce one cavan of husked rice, a cavan of palay would cost between ₱15 and ₱25. I used an intermediate figure of ₱20 for a cavan of palay to convert monetary income into rice income. Multiplying the reported monthly monetary income by twelve and dividing by twenty yields an estimate for the number of cavans of palay the household could have purchased outside of the barrio during one year. Dividing by the number of persons in the household yields a monetary income equivalent in cavans of palay per person per

[4]A ganta is three liters, or one twenty-fifth of a cavan.

year. This figure is added to the reported rice income.

The most important diet supplement in Suba is camotes, or sweet potatoes. The poorer households eat them regularly. I guessed that each field of camotes a household reported is equivalent to 0.2 cavans of palay per person per year. This figure should be supplanted by one based on accurate data. Since many households raise camotes solely for their animals the additional income equivalent may artificially raise their reported income. Also, since camotes are very cheap (Scheans reports a bucket of them cost ₱0.50 in 1958.), poorer families may buy them in lieu of rice. They are also purchased for animals.

The total income in palay, money and camotes is compared with a scale based on minimum subsistence income to determine the reliability of economic information. The scale is presented in Table III.

TABLE III

SCALE USED TO DETERMINE THE RELIABILITY OF ECONOMIC INFORMATION GIVEN BY SUBAN HOUSEHOLDS

Assessmt. of Reliability	Indicated Consumptn.	Code No.
Unreliable	0.0-0.4 cavans per person per year	0
Relatively Unreliable	0.5-0.9	1
Relatively Reliable	1.0-1.4	2
Reliable	1.5 +	3
Unknown		4

The scale is very generous when it is compared to the minimum subsistence income of 1.5 cavans of palay per person per year. Theoretically, any household reporting less than this amount could not avoid starvation.

Adjusting the Coding System

It might be useful to split the information on individuals and households onto separate computer data cards. I coded economic information on the card of the househead. If the economic data are coded on a separate card, the code indicating that an individual is a househead should be retained on the individual data cards if the household code in columns 1 and 2 is eliminated. Retention of this code would allow the computer to be programmed to count the number of households. However, as the categories of information are increased, additional data cards would become necessary in any event.

Several additional categories might be desirable and useful. The method can accommodate any category which can have its alternatives numerically coded. Some additional categories of information which would be desirable include information on education and literacy, age at marriage, age and reason for emigration and immigration, political affiliations, native language and ability to speak other languages, personal physical and genetic traits and important social statuses, e.g., possession of special knowledge or powers or membership in clans or lineages.

Other information which is not as amenable to coding might also be useful to a demographic analyst. Such information includes the knowledge and use of birth control methods, size of the breeding unit (area from which spouses are drawn), altitude, size of the village, a map of the village, size and yield of the fields, second cropping, irrigation, absentee ownership and household data such as energy sources, water supply, toilet facilities and health care resources. These suggestions are not exhaustive, but they will hopefully stimulate the census-taker and guide him to the kinds of information which he should collect.

III. COMPUTER PROGRAMMING

General Features and Format

The following discussion is intended to give the careful reader with a knowledge of FORTRAN IV the information necessary to adapt the computer programs to his own needs. It is not intended to give the reader a working familiarity with FORTRAN IV. Any demographer or field worker who wishes to use the programs must take the time to learn FORTRAN IV or engage the help of someone with knowledge of FORTRAN. Since the programs are basically simple in design and operation, an extensive computer background is not necessary. However, if the field worker does not have access to a computer with a FORTRAN compiler identical to the one used by me, the programs

will have to be adapted for use on the computer to which the worker has access. The adaptations will probably require the assistance of an experienced programmer.

The core of the method is a series of seven computer programs written in FORTRAN IV and originally designed for use on the IBM 1130 computer. Due to changes in computers at Portland State University, updated programs are unavailable for publication with this thesis. I wrote each program on FORTRAN coding sheets and then punched it onto computer cards. Each program was first compiled without data cards to find any errors. Once the program was debugged, I submitted it to the computer operator along with the first fourteen data cards to see if the computer program yielded the information as desired. Any errors were eliminated. At this point each computer program was ready for submission with the complete set of data cards.

The general format is the same for all of the programs. The computer is given the dimension of all of the major variables. This process tells the computer how much storage space to reserve for a particular variable. For all but the last program analyzing household data, age brackets are needed in the printout. For that reason, for all of the other programs, a single card containing the following information is placed at the top of the data pack: 0-45-910-1415-1920-2425-2930-3435-3940-4445-4950-5455-5960-6465-6970-7475 +. After the variables are dimensioned, the

computer reads this card and stores the values for use in the printout.

Since a computer must be told what the value of a variable is before it can manipulate it properly, the next step in the programs is to have the computer read the initial value of each variable as zero. On the IBM 1130 a final preliminary step of the programs had been to have the computer read the categories which the program uses off of the data cards and to store those values on a disk. However, disk storage has been eliminated in subsequent revisions.

The actual operation of a program consists of telling the computer which variable or variables to read while summing the appropriate totals. For example, if the number of resident married females is desired, the computer is instructed to look at residents only, then see if they are females, and, if so, whether they are married or not. If the resident female is married, the computer adds one to the relevant variable and proceeds to read the data from the next card. After information from all of the cards is read, the computer has the desired total. This figure can then be used for computations, such as determining the percentage of resident females who are married.

The third basic part of each program sets up the format of the printout. All of the output is presented in tables which are labeled. The computer is told what the labels are. If the output is by age group, the format for

output of the totals for the population is also stored in the computer.

A computer access card is necessary, the format for which the computer operator must tell whoever is having the programs run. A job card is also necessary, but this was provided by the computer center at Portland State. The program is followed by an // XEQ card, the age data card where appropriate, and the pack of data cards.

Common Variables

IARRA (X), IARRA (I, X). The variable IARRA is the one used to read information off of the data cards. The number of variables the program uses is "X". The number of data cards is "I".

AGE(32). The variable which reads the age data card is AGE(32). The cards which accomplish this task look like the following.

```
      READ(2,1)(AGE(J),J=1,32)
    1 FORMAT(2(A2,A1),13(A3,A2),2A2)
```

The AGE(32) variable is given in "A" or alphanumeric format so that the computer will print the variable exactly as it is given to the computer. These variables are not used in computations. Since alphanumeric variables can be a maximum of four digits (A4), the age brackets are each broken into two parts. This severance also allows computer manipulation of the age brackets so that fewer than sixteen may be used, such as in the marriage and fertility program where only six

age groups are used in some tables. The first program uses the variable IAGE(32) rather than AGE(32).

DATA Cards. With a data card information is stored as a constant between two slashes. Alphanumeric constants are coded within apostrophies. I used two data cards when they proved necessary.

```
DATA M/' '/
DATA MM/'  '/
```

The first card assigns the variable M the alphanumeric value of a blank. The second card gives MM the value of a double blank. The purpose of these DATA cards is to provide a means for distinguishing between blanks and zeros on the coded data cards. The computer will read a blank as zero unless it is instructed otherwise. When reading the data the computer is told to reread the relevant variables as alphanumeric ones. During the course of the program, the alphanumeric value of the variable is compared to either M or MM. If they are not the same, the computer knows that the space is not blank and it reads the integer variable for use in the program.

The Programs

Population Profile Program. This program is the first one I wrote. The information is printed out all at once after compilation for all age groups rather than as compiled for each age group. In the other programs, where the data are printed out by age group, the computer is instructed to add the totals for the group to the population totals before

beginning again with the next age group, so that information for each age group is not stored. Since this program retains all of this information, it uses more storage space. The program yields totals for several separate categories of information. These categories could be separated into separate programs at the researcher's convenience. Although not all of the separately coded categories are utilized in this program, the format card for this program reads all forty-seven of the coded pieces of information. The other programs only read the categories which are actually needed for that program. This program requires the use of an age data card preceding the actual census data cards.

The information which the program yields and the computer variables used to compute this information are listed in Table IV.

It would be possible to convert marital status to a two-dimensional array, such as the ones for sitio residence and religion. The variable could be MS(X,W) where W is two times the number of possible marital statuses coded in column 26. Alternatively, two arrays could be used, one for each sex, such as MSM(X,V) and MSF(X,V), where V is the number of possible marital statuses in column 26. With either kind of array system, appropriate markers for the total number of males and females of each marital status would be needed, such as those used for Table IV for sitio

TABLE IV

POPULATION PROFILE PROGRAM OUTPUT AND COMPUTER VARIABLES

Output	Variable: By Age Group*	Total
Number of persons	NUMB(X)	NUMBT
Number in each sitio	NSITE(X,Y)	NSITL, NSITT NSITS, NSITC
Number adhering to each religion	NREL(X,Z)	NRLAG, NRLPR NRLCA, NRLOT NRLNE
Number of Males	NM(X)	NMT
Number of Females	NF(X)	NFT
Sex Ratio	SEXRA(X)	SEXR
Males in Home	NMIN(X)	NINM
Females in Home	NFIN(X)	NINF
Males out of Home	NMOUT(X)	NOUTM
Females out of Home	NFOUT(X)	NOUTF
Total in Home		IN
Total out of Home		OUT
Percent of all Males	PCM(X)	
Percent of all Females	PCF(X)	
Percent of Population	PC(X)	
Dependency Ratio		DR
Marital Status:		
Single Males	NSM(X)	NMS
Married Males	NMM(X)	MM
Widowers	NWM(X)	NMW
Divorced Males	NDM(X)	NMD
Unknown Males	NNM(X)	MUN

(Continued)

TABLE IV

(Continued)

Output	Variable: By Age Group*	Total
Marital Status:		
Single Females	NSF(X)	NFS
Married Females	NMF(X)	NFM
Widows	NWF(X)	NFW
Divorced Females	NDF(X)	NFD
Unknown Females	NNF(X)	NUNF

*X is the number of age groups. Y is the number of alternatives in column 16. Z is the number of alternatives in column 11.

residence and religion. Alternatively, the numbers could be totaled by using an array variable, e.g., MST(W).

Marriage and Fertility Program. The output of marriage and fertility data breaks into three separate parts, with the output for each part completed before the computer begins the next part. Within each part the data for each age group is calculated and printed and the total is added to the appropriate variable before the computer proceeds to the next age group. The totals for the age group are not separately stored.

The first part of the output basically presents the total number of children and the number of living children which each female in Suba has borne. The second part concerns age at first and latest child, generation time, and the number of times a person has been married. The third part presents results analogous to the second part for deceased females and males who were spouses of persons

classified as a househead in 1958. For the second and third parts the output is generated in age groups of fifteen years rather than the five-year breakdown which otherwise appears in the programs.

The information which this program yields and the variables used to compute this information are listed in Tables V and VI.

Mortality Program. There was very little information available on deceased Subans, so the mortality program was written with the knowledge that it would not yield very complete or accurate information. The output comes from three loops of the program -- one for all deceased Subans, one for males, and one for females. The information which this program yields and the variables used to compute this information are listed in Table VII.

In order to adapt this program for a different census, certain adjustments to the program are necessary to reflect the year in which the census was taken. These adjustments are discussed at the end of this chapter.

Workplace Mobility. This program is designed to compile information regarding the Suban workers who were temporarily out of Suba at the time of the census, who leave the barrio seasonally to find work elsewhere, or who have emigrated. The program does not compile information with respect to the jobs held by these individuals; the following program provides that data. This program is very

TABLE V

MARRIAGE AND FERTILITY PROGRAM OUTPUT AND COMPUTER VARIABLES FOR LIVING RESIDENTS

Output	Variable: By Age Group*	Total*
Distribution of Females by:		
Number of Living Children	KNO(Y)	KN(Y)
Total Number of Children Borne	KTN(W)	KT(W)
Age at First Child	KAGF(Z)	
Age at Most Recent Child	KAGL(Z)	
Number of Females	NAGE(X)	NAG
Number of Children (By Age Group of Mother)	KNC	NKT
Number of Females with Children		ITOTL
Number of Twin Births		NTW
Percentage of Twin Births		TWINS
Number of Females 15-49		NG
Number of Children Under 5		NU5
Total Population		NTN
Fertility Ratio		FR
Birth Rate		BR
Average Number of:		
Children Borne per Female 15 or over		AVKPF
Living Children per Female 15 or over		AVLK
Deceased Children per Female 15 or over		AVDK
Number of Times Married:		
All Females (Living and Dead)	NT	
All Males (Living and Dead)	MT	
Average for all Females	TM	
Average for all Males	TMM	
Estimate of Generation Time	GEN	

(Continued)

TABLE V

(continued)

*X is the number of age groups. Y is the number of alternatives for column 28. W is the number of alternatives for column 28 plus those for column 29. Z is the number of age groups used for data on the childbearing of females.

TABLE VI

MARRIAGE AND FERTILITY PROGRAM OUTPUT AND COMPUTER VARIABLES FOR DEAD SPOUSES OF HOUSEHEADS

Output	Variable: By Age Group*	Total
Number of Females	NDAGE(T)	NDAG
Number of Males	MAGE(T)	MAG
Data for Females:		
Number of Living Children	KL	
Average Number of Living Children	AL	
Total Number of Children Borne	KZ	
Average Total Number of Children Borne	AK	
Age at First Child	NAF	
Average Age at First Child	AF	
Age at Last Child	NAL	
Average Age at Last Child	AL	
Average Number of Times Married:		
Males	TM	
Females	TN	
Percentage of Twin Births		TWRT
Generation Time	GT	

*T is the number of age groups used for data on deceased persons.

TABLE VII

MORTALITY PROGRAM OUTPUT
AND COMPUTER VARIABLES

Output	Variable: By Age Group*	Total*
Cause of Death	NCOD(X,Y)	NOS(Y)
Number Born Within a 5-Year Span	NAGE(X)	NAG
Number in NAGE(X) Who Have Died	NCOH(X)	NCH
Percentage of NAGE(X) Now Dead	PCD(X)	
Age at Death	IYR(X,Z)	NYR(Z)
Year of Death		IY
Death Rate:		
Over Past 5 Years	DR(X)	DRT
Five to 10 Years Ago	DRE(X)	DRTE

*X is the number of age groups. Y is the number of alternatives for columns 40 and 41. Z is the number of cohorts for which death rate estimates are being computed.

simple in operation and design and need not be utilized for a population where an insignificant number of members work outside of the census area. The information which the work-place mobility program yields and the variables used to compute this information are listed in Table VIII.

Occupations. The fifth program compiles the information on the occupations which Subans pursue. Originally, the program was designed so that it had to be run six times with substitution of a few cards each time to produce the new data required. To minimize the possibilities of error, the need for substitution was eliminated and the program is

TABLE VIII

WORKPLACE MOBILITY PROGRAM OUTPUT
AND COMPUTER VARIABLES

Output	Variable: By Age Group*	Total*
Number of Workers	NAGE(X)	NAG
Location of Work	NPLC(X,Y)	IN, IOUT, ISOUT
Place of Work in Past:		
Males Currently in Suba	NWHRP(X,W)	NWRP(W)
Females Currently in Suba	MWHRP(X,W)	MWRP(W)
Place of Work if Out of Suba:		
Males	NWHR(X,Z)	NWR(Z)
Females	MWHR(X,Z)	MWR(Z)

*X is the number of age groups. Y is the number of alternatives for column 20. Z is the number of alternatives for column 21. W is the number of alternatives for column 22. (Note that W = Z + 1.)

modified to yield information on the jobs held by Subans in and out of the barrio and analyzed by sex. The coding of the cards makes it possible for the census taker to list two occupations for any given individual, and the output of the program reflects this ability. The information provided by this program and the variables used to compute this information are listed in Table IX.

Migration. The migration program compiles information with respect to emigration and immigration. Like the previous program, this program was originally designed to run several times (three), requiring the substitution of cards. The program now requires no substitution. Basically

TABLE IX

OCCUPATIONS PROGRAM OUTPUT AND COMPUTER VARIABLES

Output	Variable: By Age Group*	Total*
Number of Persons:	NAGE(X)	
Persons with one Occupation		NAG
Persons with two Occupations		NG
Number Engaged in an Occupation	JOBS(Y)	JBT(Y)

*X is the number of age groups. Y is the number of alternatives for columns 50 and 51.

the program concerns the origin and time of entering Suba for immigrants, and the occupation, location, and permanence of separation from Suba for emigrants. The information compiled by the migration program and the variables used to compute this information are listed in Table X.

Households and Economic Strategies. The final program compiles information with respect to the family structure of households and the economic activities of these households. This program does not require an age data card. The program basically tallies the number of households under each alternative of code and the output simply prints the totals. For this reason Table XI does not show the dimension of the variables as do the previous tables. For every variable except the number of fields owned (columns 63-64) and the number of animals owned (columns 67-68) the dimension of the variable is simply the number of alternatives which can be coded in the corresponding

TABLE X

MIGRATION PROGRAM OUTPUT AND COMPUTER VARIABLES

Output	Variable: By Age Group*	Total*
Number of Persons	NAGE(X)	
Origin of Immigrants	NORIG(Z)	NORT(Z)
Time of Immigration	INBEC(W)	NBT(W)
Number of Persons not in Suba	JAGE(X)	
Number Engaged in an Occupation while out of Suba	JOBS(Y)	JBT(Y)
Location of Emigrants	NWHR(T)	NWT(T)

*X is the number of age groups. Y is the number of alternatives for columns 24 and 25. Z is the number of alternatives for columns 17 and 18. W is the number of alternatives for column 23. T is the number of alternatives for column 21.

column or columns. Most output tables use the code number for the alternatives rather than using separate labels. A few tables show the information using the scale taken from the code alternatives or one programmed into the computer; it is obvious from the printout when these scales are used. The information provided by this program and the variables used to compute this information are listed in Table XI.

Adjusting the Computer Programs

In order to adapt the programs for use on information from another population certain changes are required, and others will be desirable. Each of the programs must be changed to reflect the number of individuals for whom the

TABLE XI

HOUSEHOLDS AND ECONOMIC STRATEGIES PROGRAM
OUTPUT AND COMPUTER VARIABLES

Output	Variable	Average
Number of Households	NCNT	
Number of People	INTOT	
Sizes of Households	INT	AIN
Family Types	IFAMT	
Tenancy	JTEN	
House Structures	JHSTR	
Ownership of Fishing Gear	KFSG	
Fishing Income	KFSI	
Fishing Lot Membership	LOTM	
Investment in Land	LNDI	
Claim to House	LNHSN	
Number of Fields Owned	LNDFD	
Investment in Animals	NANVL	
Number of Animals Owned	NAN	
Animal Tenancy	NANTC	
Diversity of Economic Activity	MDIV	AD
Income in Cavans of Palay	NCAV	AC
Income from Barter	MBART	
Monetary Income	MONIN	
Reliability of Information	NRLAB	AR
Household Strategies	NSTRT	AS

census-taker has information. Wherever the number "667" (the number of Subans on whom I had coded information) appears in cards such as DO J=1, 667, the 667 must be replaced with the number of cards in the researcher's census.

Similarly, in the mortality program wherever the number "958" appears, the year of the census, omitting the first digit, should be substituted. Wherever the number "957" appears in that program the last three digits of the year before the census should be substituted. For example, for a census taken in 1978 the former number should be "978" and the latter, "977".

If any adjustments in the age groups are desired, the AGE or IAGE variable must be changed and the age data card changed. Generally, unless the researcher has special requirements for a more extensive breakdown, the five-year age groups now programmed, with the highest group 75 or over, should be sufficient.

If the researcher wishes to add or delete alternatives to the existing codes he may do so provided the cards dimensioning the variables accomodate the number of alternatives desired and provided the programs are changed to reflect a greater or lesser number of alternatives in the analysis. If the additional alternatives require the use of an extra column on the data cards, the format statement reading the variables will have to be altered to reflect

the change in the coding system.

If additional variables are required or useful, the researcher will have to go through all of the processes described earlier in this chapter in developing a code, coding the cards, and developing a program to read and analyze the code.

Finally, to obtain the output in its most readable and comprehensible format, the WRITE statements must be changed to reflect the actual residence areas, religions, economic activity, etc., of the population being analyzed. If the spacing of the labels is changed, the corresponding format statements for writing the variables must be changed to reflect the new spacing.

If the researcher expands several codes and adds new ones he may find it more convenient to code information about individuals on one card and information about households and economics on a separate card. Then the cards used for the final program would be the only ones used for that program and they would be used for no other program. This procedure would require changes in all of the format statements reading information off of the data cards. However, unless the program is used for a population very similar in its economic structure to Suba, the program will essentially have to be rewritten anyway.

CHAPTER III

SUBSTANTIVE FINDINGS

I. POPULATION STRUCTURE

Age and Sex Distribution

Figure one presents a profile of the Suba population as of January 1958. Table XII presents a numerical summary of the same data. There were 504 Suba residents present at the time of the census. An additional seven persons listed as Suba residents were absent during the census period. This figure corrects the erroneous figure of 446 given by Scheans (1963).

The two most important demographic measures used in the analysis of the age and sex structure of a population are the sex ratio and the dependency ratio. The sex ratio (males per 100 females) in the Philippines is 106, an unusally high figure since males have higher mortality in younger ages than females (Concepcion 1966b; Lorimer 1966). Lorimer (1966) has said this may indicate an unusually high sex ratio at birth for Filipinos. In fact, the indicated sex ratio at birth is so high that the reported national sex ratio is probably more likely due to a systematic bias of some kind (e.g. migration) than to an abnormally high sex ratio at birth. Hunt et al. (1963), in commenting on

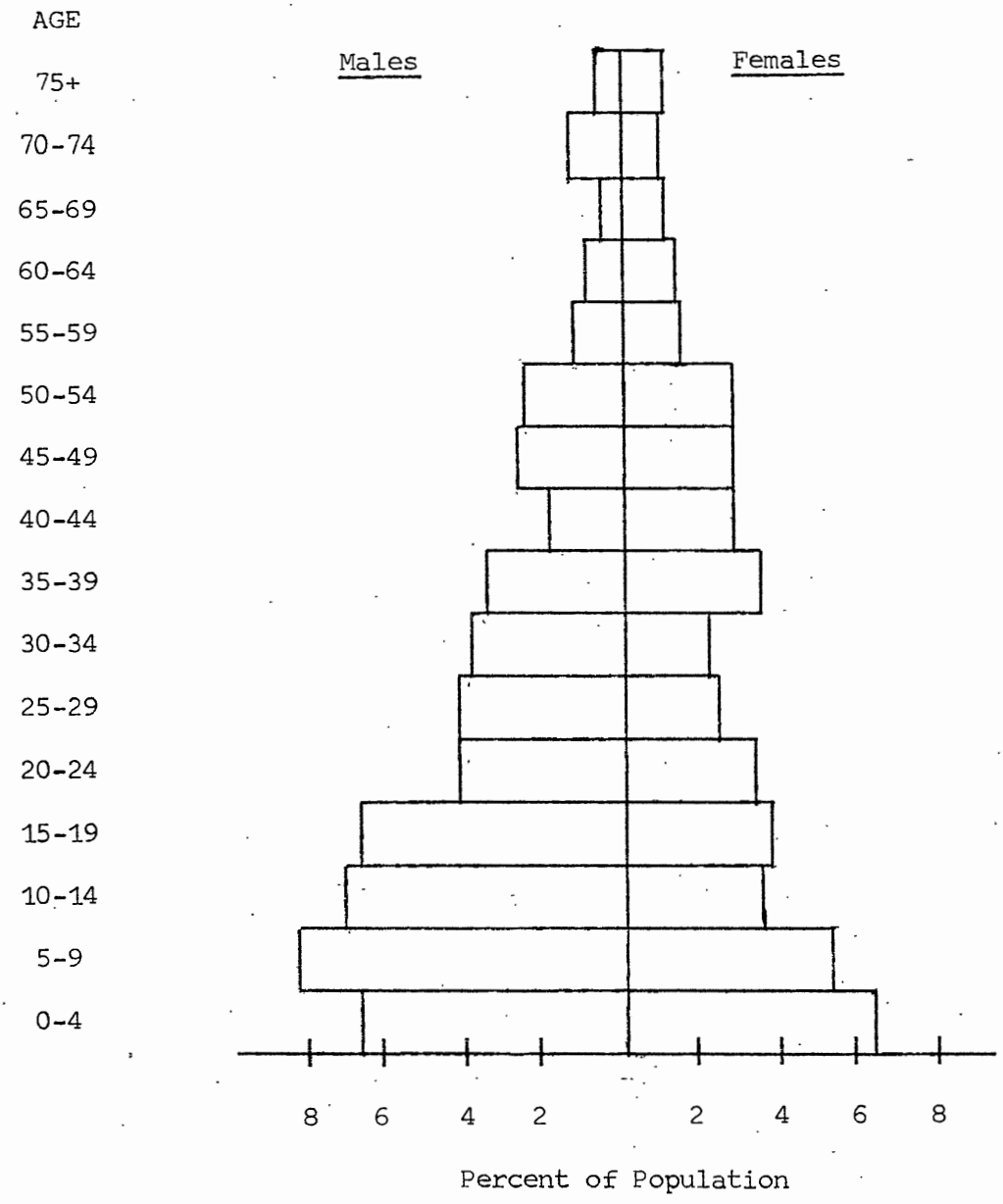

Figure 1. Population pyramid for Suba, 1958

TABLE XII

SEX RATIO AND AGE DISTRIBUTION OF THE SUBA POPULATION, JANUARY 1958

Age Group	Number	Percent	Male	Female	Sex Ratio
0-4	65	12.72	32	33	96.96
5-9	70	13.69	41	29	141.37
10-14	54	10.56	35	19	184.21
15-19	52	10.17	32	20	160.00
20-24	38	7.43	20	18	111.11
25-29	32	6.26	20	12	166.66
30-34	30	5.87	19	11	172.72
35-39	35	6.84	17	18	94.44
40-44	25	4.89	10	15	66.66
45-49	28	5.47	13	15	86.66
50-54	27	5.28	12	15	80.00
55-59	16	3.13	7	9	77.77
60-64	11	2.15	4	7	57.14
65-69	8	1.56	2	6	33.33
70-74	11	2.15	6	5	120.00
75+	9	1.76	3	6	50.00
TOTALS	511	100.0	273	238	114.7

the provincial variations in sex ratios note that Ilocos Sur and Ilocos Norte have the two lowest sex ratios for persons ten years of age or older, 90.1 and 91.8, respectively. Thus, these provinces run counter to national trends.

Suba itself shows the bias of the national trends, but to an even greater extent. The overall sex ratio of 114.7 can be partly explained by a greater outmigration of females from Suba, but this factor only accounts for differences among those 15 to 24 years old. Among 25 to 34 year olds another factor is a greater number of Suban females moving out of the barrio to marry and live than move into Suba to marry male residents of the barrio.

The greatest mystery of the Suba population is the cause of the wide preponderance of males over females in the 5 to 14 age range. Any forces which affect this age group, other than mortality which should tend to increase the proportion of females, should be relatively free from sexual biases except of a statistical nature. It is possible that the wide disparity is due to chance since the total number of people under 15 is below 200.

The 1960 sex ratio in the municipality of Paoay is in line with the provincial bias (Philippine Bureau of the Census 1961). The 1960 Suba population (552) shows a sex ratio of 116.5, a continuation of the previous bias. This is the highest sex ratio found in any barrio in Paoay.

The sex ratio of Paoay in 1970 was 88.3, while the 1970 Suba population of 338 males and 315 females had a sex ratio of 107.3 (Philippine National Census and Statistics Office 1974).

Suba is only one of three barrios in Paoay in 1960 to have a sex ratio above 100, and one of four in 1970.

One possible explanation for the high sex ratio in Suba among those in the labor force (15 to 64 age group) might be that the Suban area, which fronts on Paoay lake (the largest body of freshwater in the Northern Philippines) offers males economic opportunities and incentives to remain, so that fewer of them migrate out relative to municipal and provincial trends. Suba and Sungadan, both near the lake, were the only two barrios to have sex ratios over 100 in both 1960 and 1970. A third barrio in the 1970 census was also near the lake. The other two barrios with high sex ratios (one in 1960 and one in 1970) may be unique situations; one grew very slowly from 1960 to 1970 and the other barrio substantially declined in population over the same period.

The dependency ratio is a measure of the relationship of the number of people between the ages of 15 and 64 to those not in that age range. Persons 15 to 64 years of age are assumed to be the labor force, i.e. those actively contributing to the local economy, while the other persons are assumed to be economically non-productive, i.e. depen-

dent. A dependency ratio of 100 means that the productive and non-productive portions of the population are equivalent. A lesser figure suggests a relatively smaller number of dependents, whereas a higher figure implies more dependents.

The Suban dependency ratio of 73.8 accords well with the Paoay figure of 71.7 and the Ilocos Norte ratio of 83.0 (Philippines, Bureau of the Census and Statistics 1961). These figures are all significantly lower than the national ratio of 93.8 (Concepcion 1966b), suggesting that the Suban, Paoay, and provincial populations are older than the Philippine population. This conclusion is indicated by the facts that the former have a lower percentage of persons under 15, a higher percentage of persons 65 or over, a lower dependency ratio, and a higher median age (22) than the Philippine population as a whole (17.1) (Philippines, Department of Commerce and Industry 1966).

Another important indicator of the growth potential of a population is the percentage of persons under 15. A survey conducted in 1957 revealed that 45.6 percent of the Philippine population was under 15. The figure for Suba is 37 percent, which is probably representative of the Paoay and Ilocos Norte populations. A lower birth rate and/or higher death rate are indicated for the Ilocos area.

Weiss has noted (1973) that the quality of census

data often varies and is subject to influences beyond the census-taker's control or comprehension. Errors in the ages reported by Subans exemplify Weiss' observation. Digit preferences are striking, although these preferences are not fully apparent in figure one (page 38) due to the use of five-year age groups. There is a slight tendency to give an age in the "fertile" years (15-50), except for persons who are clearly old. These older persons probably tend to overestimate their real age, often because they have no idea what their real age is and since old age is associated with higher status in the community. Also, parents with children under five often report their child's age as five or over. This reporting bias may have influenced the age-specific sex ratios if males under five were more often reported to be five or over than were females. A low number of individuals in specific age groups may be due to such factors as seasonal employment. The census of Suba was taken at a time when some young persons (especially males) would be harvesting rice in other areas of the Philippines. Nevertheless, most of the irregularities in the sizes of the age groups in the Suba population can be explained by digit preferences and by the two world wars.

Religion

Ilocos Norte is one of the six regions in the Philip-

pines where the Philippine Independent Church or Aglipayan religion is strong (Wernstedt and Spencer 1967). The majority of people in Ilocos Norte, Paoay and Suba are of this faith, an offshoot of Catholicism started in 1902 by a Filipino priest, Gregorio Aglipay. This religion is stronger in Suba than in Paoay or Ilocos Norte as a whole, with 402 Suban adherents. In addition, there were 86 Catholics, the religion of the overwhelming majority of Filipinos. There were also six persons of another religion, and 17 persons for whom no religion was known.

Sitio Residence

There were four sitios or hamlets in Suba, three of approximately equal size and a fourth about one-third that size. The smallest sitio is Libtong with 48 people. Tacnir has 137 persons. Eastern sitio, which is composed mainly of tenants, has 172 people. Central sitio has 154 persons. Sitios are primarily social groups, unlike the barrio which is primarily a political unit. Even though the barrio is the smallest political unit in the Philippines it often seems to lack any distinguishing social features (Romani 1965). There are differences among the sitios in terms of the economic activities that residents pursue, but none of these seem particularly significant except for tenancy, as discussed later.

II. VITAL STATISTICS AND MARRIAGE DATA

Fertility

A 1956 survey showed that the average Filipina between the ages of 45 and 54 who had ever been married had borne 7.22 children. As in most other countries, the number of children decreased when the mother had more formal education, but the decrease was not as substantial as in some Western countries. Females with some high school education had 5.60 children, while those with some college education had 4.13. Lower fertility for Suba than for the Philippines is indicated by Tables XIII and XIV. The average number of children per ever-married female over 44 in Suba was 5.24, considerably below the Philippine figure. Of these children, an average 3.78 were alive, with 1.46 dead. The average number of children per female over 14 was 3.09, with 2.52 alive and 0.56 dead. Of all the births for which data was available 0.64 percent were twin births, although the meagre data base does not provide a firm basis for establishing a twin rate.

The Suban data are consistent with the subsequent finding of other researchers of lower fertility in rural Luzon and the Ilocos area than for the rest of the Philippines (Flieger and Koppin 1973; Madigan and Avenceña 1964). Lorimer (1966) has reported the results of the Philippine Statistical Survey of Households (PSSH) for 1958 as to the

TABLE XIII

TOTAL NUMBER OF CHILDREN PER EVER-MARRIED FEMALE BY AGE OF FEMALES

Age	Number of Females with X Children													Total
X=	0	1	2	3	4	5	6	7	8	9	10	11	13	
15-19	1		1											2
20-24	3	4	5	2	1		1							16
25-29		2	5	1		1	1							10
30-34	1	1		1	2	3	1	1						10
35-39			4	5	1	4							1	15
40-44			1	1	2	3		1		1	2			11
45-49	2	1	1				1	2	1	1	1	1		11
50-54		2	1	3		1		2	2					11
55-59				1			1	2						4
60-64				1	2				2		1			6
65+	5		1		1		2	1	1	1	4			16
Totals	12	10	19	15	9	12	7	9	6	3	8	1	1	112

TABLE XIV

NUMBER OF LIVING CHILDREN PER EVER-MARRIED FEMALE BY AGE OF FEMALES

Age	Number of Females with X Children											Total
X=	0	1	2	3	4	5	6	7	8	9	10	
15-19	1	1										2
20-24	5	3	4	2	1		1					16
25-29	2	1	4	1		2						10
30-34	1	1		1	3	3		1				10
35-39	1	1	3	5	2	3						15
40-44			1	1	6		3					11
45-49	2	2				1	2	1	2		1	11
50-54		2	3	1		3	1	1				11
55-59				1	1	1	1					4
60-64			2	2	1			1		1		6
65+	5		2			2	1	2	3	1		16
Totals	17	11	19	14	14	15	9	6	5	2	1	112

number of children born per ever-married female. For Filipinas 25 to 29 years of age the number of children averaged 3.4, while the figure for Suban females of this age group was somewhat lower, 2.6 children. Filipinas in the 30 to 34 age group had an average 5.1 children, compared to 4.0 children for Suban females. For Filipinas 35 to 44 years old the number of children was 6.3, whereas in Suba the figure was only 4.8. These differences are significant and systematic, supporting the conclusion that fertility levels are lower in Suba and Paoay than in the nation as a whole.

The ages of Suban females at their first birth is summarized in Table XV. Table XVI presents similar data

TABLE XV

AGE AT FIRST BIRTH BY AGE GROUP OF FEMALES

Age	Number of Females of X Age at First Birth							Totals
	X= 15-	15-19	20-24	25-29	30-34	35-39	40+	
15-29	1	7	15	1				24
30-44	3	5	14	6	6	1		35
45-59	1	9	7	1	4	1	1	24
60-74		7	4		2			13
75+		1	1	2				4
Totals	5	29	41	10	12	2	1	100

TABLE XVI

AGE AT MOST RECENT BIRTH BY
AGE GROUP OF FEMALES

Age	Number of Females of X Age at Most Recent Birth X=15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+	Totals
15-29	1	18	5						24
30-44	1	3	7	11	11	2			35
45-59		1	3	7	4	9			24
60-74		1	1	1	4	2	3	1	13
75+				1		1	1	1	4
Totals	2	23	16	20	19	14	4	2	100

for the ages of Suban females at their most recent birth. Most females appear to start their families very soon after marriage since the distribution of ages at first birth is very similar to the provincial distribution for age at marriage. The data on age at most recent birth, especially for those 45 and over, show that a significant number of female Subans stopped having children fairly early, before age 35. It seems unlikely that this group alone could account for the lower fertility in Suba since the great majority of females have their last child after age 35. This suggests that Suban females space their children to a certain extent. The method of spacing children, if any, deserves investigation.

It should be noted that the age of a Suban female at her first and most recent birth is often an estimate.

Estimates were required when the first or last child was dead, when all children were dead, or when the mother was dead.

There is compelling evidence that fertility levels are lower in Suba than in the nation. The national registered birth rate varies between 20 and 30 (United Nations 1959, 1964a; Lorimer 1966). Demographers who have attempted to assess the actual crude birth rate have usually developed estimates between 45 and 50, a high figure (USDA 1961; Concepcion 1966b; Flieger and Koppin 1973; Madigan and Avenceña 1964; United Nations 1971, 1973a, 1973b). The crude birth rate for Suba is 25.4. However, this figure does not include births of children who died before the census was taken. The crude birth rate is based on relatively few births, so the figure must be viewed with caution. The overall crude birth rate is probably close to 30, still well below the national rate.

Lower fertility in Suba is also substantiated by the fertility ratio, which is the number of children under five per thousand females between the ages of 15 and 44, inclusive. The fertility ratio in Suba is 367.6; Madigan and Avenceña (1964) noted that at that time the ratio for the Philippines was 771. This great disparity demonstrates that there are relatively fewer young children in Suba. Since the generation time in Suba is approximately 30 years a systematic spacing of births again seems

to be indicated.

It might be possible to infer fertility and mortality levels in Suba from the differences between Scheans' 1958 census and the 1960 and 1970 censuses conducted by the Philippine government. The 1960 census showed an increase in the Suban population of 24 males and 17 females. If the increase were due solely to natural causes (births and deaths) a crude birth rate of about 50 would be indicated, clearly higher than the age structure and fertility data suggest had been true in the past. There are several possible explanations besides an increased birth rate for the increase in population. The 1958 and 1960 censuses may not have enumerated exactly the same area or there may have been some net in-migration. The 1960 Philippine census might have been slightly inflated or the Scheans census figure too low.

The 1970 census of Suba indicates an increase of 101 individuals in ten years, 41 males and 60 females. This increase approximates 18 percent over the ten-year period, and it would be consistent with an increase from 1958 to 1960 of approximately twenty individuals and a crude birth rate of approximately 25 to 30.

It is unclear what motive Subans or the Philippine government might have to inflate census figures. Takahashi (1970) noted that the 1960 census of Kabikuran had been considerably inflated. Since the total population figures

for the 1958 and 1960 censuses are roughly the same, accounting for natural increase, it seems likely that the 1960 census figure was not substantially inflated. Despite this conclusion, there are enough plausible causes of the different figures obtained in the two censuses to make inferences about birth and death rates unproductive.

Benedict has discussed (1972) some of the specific cultural attitudes and practices which affect fertility. He lists a series of indirect social factors, indirect because they are believed to affect fertility but the manner in which they do so is unclear. Such factors are the age at marriage, polygamy, separation and divorce, widowhood, post-partum abstinence, abstinence and menstruation, ceremonial abstinence, celibacy and the frequency of coitus. Direct social factors influencing fertility include contraception, abortion and infanticide. Little information is available on most of these subjects. Often, informants are reluctant to discuss these topics. For example, Hart (1965) found that although abortion was condemned in Caticugan, a Visayan barrio, a method of practicing it was known. The effects of the knowledge or use of this method were unclear. Hart also noted that abstinence was the only form of birth control discussed, but this was said to be "tough" for males. Most Filipino cultural attitudes and practices encourage high fertility. Conception is viewed as the normal and desired outcome of

marriage; childlessness is pitied. On the other hand, Anderson (1972) found that Sisyanos believed that it was harder to provide well for a large family these days. The extent to which various cultural attitudes and practices influence fertility in Suba is unknown.

Mortality

Data for the age at death and the cause of death and an estimate of the year of death were coded for 119 individuals. The causes of death were recorded as related by informants, therefore the typology might be called a folk taxonomy. Nosology is listed in Tables XVII and XVIII.

The principal causes of death in the Philippines are tuberculosis, pneumonia, bronchitis, and beri-beri (Philippine Information Agency 1955; Chaffee et al. 1969). Chaffee et al. pointed out that malaria is also prevalent in many areas of the Philippines, but the Philippine Bureau of the Census and Statistics (1972) noted that Ilocos Norte is not one of those areas. The causes of death given by Subans show relatively little bias by sex, except where sex is directly related to the cause of death. Fever probably includes illnesses ranging from influenza to pneumonia. The higher number of males on which information was obtained may be due to higher male mortality rates (leaving the females to report the deaths) or to a greater tendency to remember and report the males. The data on infant

TABLE XVII

CAUSES OF DEATH BY AGE DIED

Cause	Age at Death						Total
	0-4	5-9	10-19	20-39	40-59	60+	
Typhoid	1		3	4	6	3	17
Malaria	2						2
Smallpox	1	1			1		3
Dysentary	7	1	1		1		10
Bronchitis	2						2
Fever	29	6	2	2	2		41
Tuberculosis				2	3		5
Heart Attack	1	1		1	1		4
Hemorrhage					1		1
Stomach Ache	1		1				2
Menstrual Trouble			2	1	1		4
Weakness (Old Age)						1	1
Stillbirth	5						5
War Nerves				1			1
Appendicitis					1		1
Birth Difficulty	1			1			2
World War II		3	4	4		1	12
Accident			1				1
Makadalapus*	1						1
Unknown	3					1	4
Totals	54	12	14	16	17	6	119

*Spirit-caused illness

TABLE XVIII

CAUSES OF DEATH BY SEX AND AGE AT DEATH

Cause	Age at Death 0-4		5-9		10-19		20-39		40-59		60+		Totals	
Sex:	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Typhoid		1			2	1	3	1	4	2	2	1	11	6
Malaria	2												2	0
Smallpox		1	1						1				2	1
Dysentary	4	3		1		1				1			4	6
Bronchitis	2												2	0
Fever	15	14	2	4	1	1	2		1	1			21	20
Tuberculosis							1	1	1	2			2	3
Heart Attack	1		1				1		1				4	0
Hemorrhage									1				1	0
Stomach Ache		1				1							0	2
Menstrual Trouble						2		1		1			0	4
Weakness (Old Age)											1		1	0
Stillbirth	2	3											2	3
War Nerves								1					0	1
Appendicitis									1				1	0
Birth Difficulty		1						1					0	2
World War II			3		4		3	1			1		11	1
Accident					1								1	0
Makadalapus*	1												1	0
Unknown	2	1									1		3	1
Totals	29	25	7	5	8	6	10	6	10	7	5	1	69	50

*Spirit-caused illness

deaths seems fairly reliable since it implies slightly higher infant mortality rates for males, a fact well established in other areas of the world (Lorimer 1966).

Death rates and life expectancy figures as shown in Table XIX are extremely tentative and are provided merely as a stimulus for further investigation in this area. Estimates of these figures for the Philippines are unreliable due to a lack of information, in part as a result of an inefficient and incomplete registration system.

TABLE XIX

ESTIMATED AGE-SPECIFIC DEATH RATES IN SUBA

Age	Death Rate Per Year			Number Dying in 5 Years		
	Total	Male	Female	Total	Male	Female
0	120	140	95	130	150	100
1-4	2.5	2.5	1.2			
5-9	0.6	0.8	0.2	3	4	1
10-19	2.6	4.8	1.8	13	24	9
20-29	7.2	12	4.0	36	60	20
30-39	6.4	12	7.0	32	60	35
40-49	19.2	20.4	18	96	102	90
50-59	31.8	20	30	159	100	150
60-69	38.4	40	47	192	200	255
70+	59.8	40	66	299	200	330
Totals	11.0	15.0	8.0	1000	1000	1000

The death rates for Suba are essentially guesses. The data available are too deficient in quality and quantity to give any real insights into the death rate. The computer estimates of the death rate are based on deaths within the five years next preceding the census and for the five year period before that (five to ten years before the census). The necessity to estimate the year of death introduced an extra element of uncertainty in the death rate calculations.

Average life expectancy in Suba based on the tenuous death rate estimates is approximately 62 at birth and 60 at age five. For males the figures are in the neighborhood of 59 and 58 years respectively. The average female can expect to live to be around 64, but if she lives, at age five she can expect to live an average 61 additional years. Infant mortality is fairly high, but beyond infancy the death rates in Suba seem somewhat lower than in the nation as a whole, as evidenced by the fairly small and even decrease in the number of Subans from the younger age groups to the eldest age group.

Marriage

The Nydeggers (1966) have found Ilokano marriages to be stable, with regular intercourse and little premarital sex. Taboos and restrictions on coitus such as the post-partum taboo are usually short and insignificant. Divorce

and separation are very rare, and since conception is desired and sterility pitied a marriage usually leads to a fairly steady stream of children.

Chandrasekaran (1966) found that a desire for children does not mean that Filipinos want a large number of children. In one survey he found that most people want to limit the number of children they will have, that some people try to limit family size despite a lack of knowledge of birth control methods, and that the rate of illegal abortion is high.

United Nations (1959) data for the Philippines showed that most males married between the ages of 20 and 29 while females generally married between 15 and 24. Concepcion (1966) noted that 47 percent of the brides in the Philippines are under 20, but the Philippine Bureau of the Census and Statistics (1961) figures for Ilocos Norte show that only about half of the females are married by age 25. A higher age at marriage may be one reason for lower fertility in the Ilocos area. Concepcion also noted that in 1960 three-quarters of the females aged 15 to 44 were married. The 1960 census for Ilocos Norte showed that fifteen percent of the population had never been married by age 50. A higher celibacy rate is another potential reason for lower fertility in Suba.

The marital status of Suba residents shown in Tables XX and XXI is consistent with the pattern prevailing in

TABLE XX

MARITAL STATUS OF SUBA RESIDENTS

Age	Marital Status Single	Married	Widowed	Divorced	Unknown	Totals
0-9	135					135
10-14	53	1				54
15-19	49	3				52
20-24	16	22				38
25-29	14	17			1	32
30-34	7	23				30
35-39	6	28	1			35
40-44	6	18	1			25
45-49	5	18	2	1	2	28
50-54	5	16	5	1		27
55-59	5	10	1			16
60-64	1	4	6			11
65+	2	14	9		3	28
Totals	314	174	25	2	6	511

TABLE XXI

MARITAL STATUS BY SEX

Age	Marital Status										Totals	
	Single		Married		Widowed		Divorced	Unknown				
Sex:	M	F	M	F	M	F	F	M	F		M	F
0-9	73	62									73	62
10-14	35	18		1							35	19
15-19	32	17		3							32	20
20-24	13	3	7	15							20	18
25-29	12	2	7	10				1			20	12
30-34	6	1	13	10							19	11
35-39	2	4	15	13		1					17	18
40-44	2	4	8	10		1					10	15
45-49	1	4	10	8	2		1		2		13	15
50-54	1	4	11	5		5	1				12	15
55-59		5	7	3		1					7	9
60-64		1	1	3	3	3					4	7
65+	1	1	8	6	2	7			3		11	17
Totals	178	126	87	87	7	18	2	1	5		273	238

Ilocos Norte. The census data suggest that the overwhelming majority of females in Suba get married between the ages of 20 and 24. Very few females get married before 20. On the other hand, males start marrying in their early 20's and by 35 most of the males who marry and start families have already done so. It is significant that 13 of the 82 people over 49 in Suba have never been married and that 11 of these are females.

Scheans (1963, p. 225) has described the pattern of residence for newly married couples.

> Residence may be neolocal, or in the vicinity of either partner's parents, depending on the place of origin of the bride and the couple's economic situation. A tabulation of residences in Barrio Suba shows that virilocality is the prevalent residence form today.

Table XXII presents a tabulation of residences for Suba.

TABLE XXII

PLACE OF ORIGIN OF SPOUSES AT MARRIAGE BY SITIO

Origin	Sitio: Libtong	Tacnir	Eastern	Central	Total
Wife:					
Suba	5	13	14	18	50
Other	1	13	20	9	43
Husband:					
Suba	5	21	27	28	78
Other	1	5	7	2	15

The great majority of married male householeads are from Suba as are a majority of the wives. There are significantly more females from outside the barrio than males. The Nydeggers (1966) have found the same pattern in Tarong, an Ilokano barrio in Ilocos Sur province. The relative over-abundance of young males and shortage of females in Suba presents a great potential for future population growth. This growth would result from males bringing in females from other barrios with few Suba females leaving, increasing the proportion of young married people in Suba relative to the current distribution and to surrounding areas.

III. MIGRATION

Immigration

Seventy-two of the 511 Suba residents were not born in Suba. Tables XXIII and XXIV show the status of immigrants to Suba at the time of migration. Several persons moved in as nuclear family units, accounting for the immigration of children and married adults. The only other significant reasons for immigration to Suba are to marry a resident or to join relatives living in the barrio. Inmigration due to marriage is overwhelmingly female, reflecting a virilocal residence bias after marriage. Pascual has noted (1966) that immigrants to Ilocos Norte engage in a broad range of occupations; however, few are farmers. Almost all immigrants to Suba come from within

TABLE XXIII

STATUS OF PERSONS AT TIME OF IMMIGRATION TO SUBA

Age	Status Child	Adult Single	At Marriage	With Family	Unknown	Total
0-4	2					2
5-9	2					2
10-14	2					2
15-19	1	1		4		6
20-24	3	1	5	2	1	12
25-29			5	3		8
30-34	3		6			9
35-39	1		4			5
40-44	1		5			6
45-49	1		1			2
50-54			1	7	1	9
55-59				1		1
60-64			2			2
65+	2		4			6
Totals	18	2	33	17	2	72

TABLE XXIV

STATUS OF PERSONS AT TIME OF IMMIGRATION TO SUBA BY SEX

Age	Status Child		Adult Single	At Marriage		With Family		Unknown	Total	
Sex:	M	F	F	M	F	M	F	F	M	F
0-4	1	1							1	1
5-9		2								2
10-14	2								2	
15-19		1	1			3	1		3	3
20-24	1	2	1		5	2		1	3	9
25-29					5	3			3	5
30-34	3			2	4				5	4
35-39	1			1	3				2	3
40-44		1			5					6
45-49		1			1					2
50-54					1	2	5	1	2	7
55-59							1			1
60-64					2					2
65+		2		1	3				1	5
Totals	8	10	2	4	29	10	7	2	22	50

the province, as Tables XXV and XXVI show.

Accounting for out-migration (Pascual 1966) the population of Ilocos Norte increased approximately 20 percent from 1948 to 1960 compared with an increase of just over 40 percent for the Philippines. These figures again indicate lower fertility levels in the Ilocos area.

The differences in the sex of immigrants can be almost entirely explained by the virilocal residence pattern at marriage. It is interesting that immigration does not seem to be influenced by age, except for a slightly greater number of immigrants in the young adult ages of 20 to 34. The number of neolocal immigrant married pairs and the number of young children who were immigrants suggest that families who move into Suba generally have few if any children. Thus, these immigrants are probably young adults.

The immigrants all come from places within Ilocos Norte except for those from Hawaii and Cagayan, areas to which substantial numbers of Ilokanos have migrated. Relatively fewer of the persons 20 to 39 years of age list themselves as being from Suba, indicating a tendency on the part of older persons to falsify their place of origin or indicating greater movement into Suba than in the past. The fact that so many older people listed Suba as their place of origin is somewhat curious. Scheans (personal communication) has said that the village was first settled

TABLE XXV

PLACE OF ORIGIN OF SUBA RESIDENTS

Origin	Age 0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	Total
Suba	131	98	50	51	45	33	17	14	439
Baay			1		1				2
Nanguudan		1						1	2
Dingras			1						1
San Nicholas		2	8	1		5		1	17
Calayab			2	2	1	1	1		7
Laoag					1	1			2
Nagbacalan		1	1	5		2	1	1	11
Paoay	4	1	1	1	3			1	11
Gabu				1					1
Batac								1	1
Hawaii		1	1						2
Kalayan						1			1
Currimao			2						2
Cagayan		2	3	3	2			1	11
Unknown				1					1
Totals	135	106	70	65	53	43	19	20	511

TABLE XXVI

PLACE OF ORIGIN OF SUBA RESIDENTS BY SEX

Origin	Age 0-9		10-19		20-29		30-39		40-49		50-59		60+		Totals	
Sex:	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Suba	72	59	62	36	34	16	29	22	23	22	17	16	14	17	251	188
Baay					1					1					1	1
Nanguudan				1										1		2
Dingras						1										1
San Nicholas			2		3	5	1				1	4	1		8	9
Calayab						2		2		1		1		1		7
Laoag										1		1				2
Nagbacalan			1			1	2	3			1	1		2	4	7
Paoay	1	3		1	1			1		3				1	2	9
Gabu								1								1
Batac														1		1
Hawaii			1			1									1	1
Kalayan												1				1
Currimao						2										2
Cagayan			1	1	1	2	3			2				1	5	6
Unknown							1								1	
Totals	73	62	67	39	40	30	36	29	23	30	19	24	15	24	273	238

between 1870 and 1900 or so. The actual date is confused due to contradictory evidence, but the fact remains that Suba was recently a pioneer village within Ilocos Norte. Thus, it seems likely that some of the older people either came with their families as children or moved their own families to Suba. However, this migration is not reflected in the data on places of origin.

Emigration

A densely settled homeland with farms of small size coupled with limited economic opportunities in other occupations have made Ilokano farmers a major source of emigrants from the Philippines (Anderson 1972; Lasker 1931; Hart 1971; Wernstedt and Simkins 1965; Pascual 1966). Anderson (1972) and Hart (1971) have both remarked that population pressure forced many individuals to look for outside jobs, but that these jobs could also become a means to acquiring land. An individual family member may emigrate to find employment or the whole family may move to an agricultural frontier. Pascual (1966, p. 342) noted:

> The population pressure in the Ilocos region has forced families to seek new opportunities, primarily in agriculture, in the neighboring provinces of Isabela, Nueva Vizcaya, and the Mt. Province.

Many Filipinos emigrate expressly intending to return. For this reason, it may be inaccurate to characterize these individuals as emigrants. However, many never return and

many more are gone for long periods of time, 20 to 40 years is not uncommon, so that substantial Filipino colonies are established overseas. Migration patterns within the Philippines are likely to reflect permanent moves (Anderson 1972). The economic aspirations of Ilokanos appear to be oriented toward land ownership.

The locations outside of the barrio where Subans have worked or are working are presented in Table XXVII. "Other" in the table means that the individual is working in another Philippine province, usually in central or northern Luzon as a migrant agricultural worker. Most Subans have never worked anywhere but in Suba or Ilocos Norte.

The figures in Table XXVII showing where Subans have worked out in the past include again those individuals who are currently working out of the barrio. However, the totals at the bottom of the table do not count these individuals twice and they correctly reflect the number of persons who have ever worked out of the barrio. Generally, males have emigrated to Hawaii. Most emigrants to Hawaii have returned to Suba and only one person was still in Hawaii at the time of the census. Work in Cagayan and other Philippine provinces is usually seasonal agricultural work. Most of the people who leave Suba seasonally to help with planting and harvesting were still doing so. With one exception these seasonal workers are males. Emigration to

TABLE XXVII

PAST AND PRESENT LOCATION
OF OUTSIDE EMPLOYMENT
BY AGE AND SEX

Location	Age 10-19		20-29		30-39		40-49		50-59		60+		Totals	
Sex:	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Hawaii														
Past	2				1		4	1	8	1		1	15	1
Present					1								1	
Cagayan														
Past	3		5	1									8	1
Present	3		4	1									7	1
Manila														
Past		5	1	12		1	1						2	18
Present		5		9		1	1						1	15
USA														
Past						1								1
Present						1								1
Guam														
Past			1										1	
Present			1										1	
Other														
Past	3		8		1		1		1				14	
Present	2		2		1		1		1				7	
Never Out	22	9	27	23	34	28	17	29	10	11	15	23	125	135
Totals*	44		76		66		53		43		39		321	

*Not segregated by sex.

the USA and to Guam has been insignificant. One housewife lives in the US, while a young carpenter works on Guam. Manila mainly attracts young females as housegirls and lavenderas, and most of these are still in Manila.

Table XXVII also reveals that international emigration for employment is a strategy no longer used by significant numbers of Subans. In the 1920's and 1930's a number of young men emigrated to Hawaii, but few younger men chose to do so in the 1940's and 1950's. On the other hand, emigration to Manila is very popular among young females, indicating perhaps a trend of greater mobility of persons within the Philippines. Many young males emigrate seasonally, as a method of obtaining rice, mainly to Cagayan and central Luzon. There appears to be little permanent emigration of males from Suba.

Hart (1971) has commented that Visayans often obtain outside employment through their personal resource networks. A cousin or friend in Manila may arrange a job as a maid, which benefits both the girl and her family to whom she will send some of her earnings. This common tendency may well hold true for Suban Ilokanos as well and thus would account for some of the otherwise inexplicable biases in the data. That is, once Suban females are established in Manila as lavenderas or maids then they can aid others in obtaining similar employment.

The location of Suban emigrants and the permanency of

their separation from the barrio are shown in Tables XXVIII and XXIX. If it was not known whether the migrant expected to return to Suba his status was determined by whether he sent any money home. Someone sending money home was determined to be a temporary emigrant, while others were judged to be permanent emigrants. The location of emigrants is biased toward international emigration since data on migration within the Philippines was usually neither elicited nor coded.

All of the males for whom information was available were permanent emigrants, usually to Hawaii or Manila. Generally, these males were in younger adult age groups. On the other hand, female emigrants split almost equally between permanent emigrants and temporary ones, although the temporary emigrants tended to be younger. All but two of the females emigrated to Manila.

No instances of migration to places in the Philippines other than Luzon were noted. The available data on migration within the Philippines suggest primarily movements to urban areas and to agricultural frontiers.

Pascual (1966) has discovered that most people who have migrated within the Philippines are married, but his conclusion does not necessarily mean that they were married when they migrated. Unfortunately, Pascual neglected to compile statistics on the percentage of cases in which spouses came from different municipalities

TABLE XXVIII

PERMANENCY OF SEPARATION AND LOCATION OF SUBAN EMIGRANTS

Age	Permanency: Permanent	Temporary	Location: Hawaii	Cagayan	Manila	USA	Other
15-19	1	4			5		
20-24	5	7	1	1	10		
25-29	5	1			5		1
30-34	5	1	1		5		
35-39	5		3		2		
50-54	3		1			2	
Totals	24	13	6	1	27	2	1

TABLE XXIX

PERMANENCY OF SEPARATION AND LOCATION
OF SUBAN EMIGRANTS BY SEX

Age	Permanency:			Location:						
	Permanent		Temporary	Hawaii		Cagayan	Manila		USA	Other
Sex:	M	F	F	M	F	F	M	F	M	M
15-19		1	4					5		
20-24	2	3	7		1	1	2	8		
25-29	1	4	1					5		1
30-34	2	3	1	1			1	4		
35-39	4	1		3			1	1		
50-54	3			1					2	
Totals	12	12	13	5	1	1	4	23	2	1

or provinces. In fact, most migrants in the Philippines, including those from Suba, are single at the time of migration. Most migrants are also females (Flieger and Koppin 1973), due to the number of females who emigrate to become maids and to a greater number of female students than male students. Only the former factor has influenced emigration from Suba, and the Suban female is almost as likely to become a lavendera as a housegirl, although almost all of the female emigrants work as domestics.

Tables XXX and XXXI show the occupations of Suban emigrants. Housekeeper and housegirl are roughly the same job, but the terms were recorded as given by the Suban informants and may reflect some unknown distinction. A lavendera is a wash girl or laundress.

Only two occupations are shared by emigrants of both sexes, student and waitress or waiter. Females generally hold domestic or service jobs, while males usually perform physical labor. None of the emigrants are skilled workers, which suggests that they are not significantly more educated than those who remain in Suba. This pattern is contrary to national trends where migrants are slightly more educated than the average Filipino (Pascual 1966). The jobs generally have little to do with agriculture, a trend noticed by Anderson (1972) in Sisya, a Pangasinan barrio. In most ways, the characteristics of Suban migrants are consistent with national trends in the age,

TABLE XXX

OCCUPATIONS OF EMIGRANTS FROM SUBA

Occupation	Age 15-19	20-24	25-29	30-34	35-39	50-54	Total
Housekeeper	1		1	1	1		4
Housegirl	3	2	1				6
Lavendera		3		1			4
Harvester		1					1
Laborer				1	3	3	7
Waitress			1	1			2
Waiter		1					1
Amah (Nanny)	1						1
Student (above 6th grade)		1	2	1			4
Salesgirl		3	1	1			5
Armed Service		1			1		2
Totals	5	12	6	6	5	3	37

TABLE XXXI

OCCUPATIONS OF SUBAN EMIGRANTS BY SEX

Occupation	Age 15-19		20-24		25-29		30-34		35-39		50-54		Total	
Sex:	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Housekeeper		1				1		1		1				4
Housegirl		3		2		1								6
Lavendera				3				1						4
Harvester								1						1
Laborer							1		3		3		7	
Waitress						1		1						2
Waiter			1										1	
Amah (Nanny)		1												1
Student (above 6th grade)				1	1	1	1						2	2
Salesgirl				3		1		1						5
Armed Service			1						1				2	
Totals	0	5	2	10	1	5	2	4	4	1	3	0	12	25

sex, marital status and jobs held by migrants. Given the historical and current magnitude of migration from the Ilocos area as a whole it should be emphasized that Suba seems to experience less emigration. More people seek their opportunities in the barrio and municipality, perhaps due to the resources of the lake and the relatively young age of the barrio.

Ilokanos have been successful migrants despite frequent and extensive problems (Lasker 1931). The relative poverty of the Ilocos area seems to prompt the Ilokano migrant to undersell his labor relative to other groups (Wentworth 1941; Lava 1938). Lewis (unpublished) has also suggested that Ilokano social organization is one reason for the success of Ilokano migrants, since an open social organization based on personal resource networks gives the migrant more flexibility in responding to new opportunities and environments.

IV. HOUSEHOLD AND ECONOMIC DATA

Data on the size, structure and economy of Suban households were collected. Some households gave very complete, detailed and reliable information; others gave next to none.

Suban households averaged 5.15 members in size, slightly below the Philippine average (Philippines, Department of Commerce and Industry 1966). Table XXXII

presents the size distribution of households in Suba.

The basic composition of Suban households is presented in Table XXXIII. The terms describing household composition were used in the following manner. A nuclear family consists of a married pair with or without children. Nuclear families with other relatives usually have living in the household such as a parent of one of the spouses (who is often listed as the househead), a sibling of one of the spouses, or a distant relative such as an aunt, uncle or cousin. A joint family of three or more generations implies at least two married pairs or members of at least two distinct nuclear families, even if one of the spouses has died. The joint family differs from a nuclear family with relatives because the older family unit has remained intact save for the death of one of the parents. Unmarried persons who were the head of a household were generally spinsters. Married persons were taken as ego in the analysis of family structure except when they were distantly related to the househead. In such a case and in all cases where there was no married pair, the househead was taken as ego.

Scheans did not gather data on the education of Subans, but some information is available from the 1960 census of Paoay. The Bureau of the Census and Statistics (1961) reported that 75.4 percent of the people in Paoay over 10 were literate, which is approximately the propor-

TABLE XXXII

SIZE DISTRIBUTION OF SUBA HOUSEHOLDS

Size of Household	Number of Households
1	3
2	10
3	14
4	16
5	15
6	13
7	12
8	8
9	4
10+	4

TABLE XXXIII

FAMILY STRUCTURE OF SUBA HOUSEHOLDS

Family Type	Number of Households
Nuclear	61
Nuclear with some relatives	18
Nuclear with non-relatives	2
Joint, 3+ lineal generations	5
Joint, 2+ married siblings	1
Unmarried person(s) with or without relatives and non-relatives	11

tion that had ever gone to school. This figure suggests that literacy consists of the ability to read and write one's name. The reported literacy rate for males was about ten percent higher than the rate for females.

The living conditions of most Paoay residents in 1960 ranged from poor to fair. Houses in Suba are generally constructed out of bamboo and thatch, although this information was not available for many houses. Table XXXIV summarizes the house size and construction materials for dwellings in Suba.

TABLE XXXIV

HOUSE SIZE AND CONSTRUCTION IN SUBA

Size and/or materials	Number of Houses
Unknown	47
Cogon-siwali*:	
Small	18
Average	8
Large	16
Wood	10
Total	99

*Bamboo and thatch construction

According to the 1960 census about half of the dwellings in Paoay were of light materials such as bamboo and thatch, about one-quarter were of strong materials such as wood and sheet metal, and another one-quarter were of mixed

construction materials. Probably, most of the houses in Suba for which information was unavailable are of light construction and moderate size. All houses in Suba are single family dwellings as are the vast majority of buildings in Paoay. The 1960 census also revealed that a vast majority of houses in Paoay are owner-occupied, but the data for Suba do not confirm this pattern since this information was often unrecorded or only incidentally noted.

The Bureau of the Census and Statistics (1961) also revealed that most Paoay residents use kerosene for lighting, get their water from open wells, have pit toilets and use wood as their primary fuel. Since Scheans did not systematically collect information on these items his census cannot confirm that these patterns hold true in Suba as well, although there is no reason to doubt that they do. Generally, residents of Paoay and Suba have relatively small investments in their living facilities, which is one indication of a fairly low level of living since house structure and facilities are roughly related to wealth (Lava 1938).

Economic Strategies Within Suba

Since the standard of living in the Ilocos area is low, the economic strategies focus on survival. Some people naturally survive better than others, but in Suba there are no definable class differences. Subsistence

strategies in Suba revolve around four activities - farming, raising animals, fishing, and cottage industries. Households try to supplement their incomes with cash from wage work whenever possible, but local opportunities are very limited.

Land. In many cases, house ownership had to be inferred from other information on the census sheets. Table XXXV shows the economic ties between Subans and their dwellings. Persons who tenanted farmland were also assumed to be tenanting their house unless there was an indication to the contrary such as ownership of trees or a garden. Generally, tenants do not pay separately for use of the house, although the landlord may retain the right to the fruits of the trees. In some cases the name of the owner of the house was given; these owners were usually outsiders.

The available information concerning tenancy consisted of whether the household farmed any land as tenants,

TABLE XXXV

HOUSE OWNERSHIP AMONG SUBA HOUSEHOLDS

Economic Tie to the House	Number of Households
Own	53
Rent	13
Tenant	22
Relative's house, No Rent	10
Unknown	1
Total	99

who owned the land, and what share of the crop each party was to receive. Very little data was collected on the size of holdings or the yield per area of land. The information on overall yield of rice (rice income) is most likely to be erroneous (Scheans, personal communication). The few people that were solely landlords reported that fact. Landlords who also farmed part of their land tended not to report their holdings which were tenanted to others. However, most of the tenants farmed land for absentee landlords, although these persons were often personal acquaintances or relatives of barrio residents. Almost all of these landlords lived in Paoay.

The landholdings of Suban households by sitio is presented in Table XXXVI. The variations in landholding status by sitio are interesting. Libtong has the fewest number of households but a greater percentage of them do not farm land than in other sitios. Tacnir contains over half of the full owners and all of its residents who work land own at least part of the land they work. In contrast, the overwhelming majority of full tenants live in Eastern sitio; however, several of the households are also owners. Central sitio is harder to characterize. A large number of part tenants live in this sitio, but all other kinds of land ownership are present as well. Perhaps more significantly, every household in Central sitio works or owns land and thus relies on the land as a major subsistence

TABLE XXXVI

LANDHOLDING STATUS OF HOUSEHOLDS BY SITIO

Landholdings	Sitio: Libtong	Tacnir	Eastern	Central	Total
None	3	5	4		12
Part Tenant		7	2	11	20
Full Tenant	2		20	3	25
Tenant & Landlord			1	1	2
Part Landlord			1	4	5
Landlord		2		2	4
Part Owner	1	2	7	2	12
Full Owner	1	10	3	5	19
Totals	7	26	38	28	99

activity. It should be noted that households which farm land as tenants and are also landlords usually own extremely fragmented parcels of land, making this arrangement useful to consolidate the land actually farmed.

Tenants predominated in the Tagalog barrio studied by Takahashi (1970). He found that most tenants had just one landlord, generally a relative. The landlord's share of the harvest was usually between 45 and 50 percent. In Suba it is common for a tenant to have more than one landlord, and although the tenant is usually not a relative of the landlord, the landlord is usually a relative of someone in the barrio. The landlord's share varies from one-half to two-thirds of the crop grown, well above the legal limit

of 25 percent.

The basic economic orientation of Subans is to the land. When Scheans questioned Subans about the land, he received vague and often inaccurate information. Consequently, information on landholdings and income from land is the poorest of the available economic data. The available information was coded directly from the census sheets. In some cases informants gave the value of their landholdings as the assessment used for computing taxes, a figure most Subans try to minimize. Generally, the value of landholdings had to be estimated. The number of fields owned or that will be inherited also tends to be unreliable. This information was totally reliable and substantiated for only one or two households. In other cases, the number was estimated from data on landholdings, the number and amount of crops other than rice grown and tenancy. The number of fields and lots owned is a rough indicator of the fragmentation of landholdings. Tables XXXVII and XXXVIII present the distributions of the estimates for the value of landholdings and the number of fields owned.

Lewis (1971) stated that the value of a hectare of wet rice land during the 1960's was ₱12,000 to ₱15,000. Espiritu and Hunt (1964) at an earlier date gave the value of a hectare of land in Ilocos Norte as ₱6,000. Even allowing for inflation and the greater value of wet rice land it can be seen that the values reported by Subans for

TABLE XXXVII

HOUSEHOLD DISTRIBUTION OF VALUE OF LANDHOLDINGS IN PESOS

Value	Number of Households
₱ 0 - 49	4
50 - 99	7
100 - 199	8
200 - 299	4
300 - 499	8
500 - 999	12
1000 - 1999	2
Some, amount unknown	17
TOTAL	62

TABLE XXXVIII

NUMBER OF FIELDS OWNED BY SUBAN HOUSEHOLDS

Number of Fields Owned	Number of Households
0 - 4	21
5 - 9	16
10 - 14	12
15 - 19	5
Unknown	8
TOTAL	62

their land imply that the holdings are generally small. Geertz (1971) noted that the average holding in Java has been fairly stable for a century or more at one hectare. Anderson (1972) and others have noted that the average Filipino holding is larger than Geertz' figure. In Sisya, Anderson found the average holding to be over two hectares, but the area cultivated varied from an average of 0.94 hectares for tenants to 2.3 hectares for owner-tenants. The low land values reported by Subans and the value and size of average landholdings in the Philippines and Ilocos Norte tentatively suggest that the size of the average holding in Suba is approximately one-half hectare.

Animals. Animal raising is an important economic activity in Suba for several reasons. As the Philippine Information Agency (1955) has said, the carabao is the main source of power for plowing and operating the Filipino farm. Smaller animals provide a small but steady supply of meat. Animals may also be sold for cash. Tables XXXIX and XL show the number of animals owned by households in Suba and the value of those animals.

Animal tenancy is an important local strategy where an animal owned by one person is raised by another. The two persons then either split the profit from the sale of the animal by a prearranged method, or they alternate in taking the offspring of the animal. For example, a poor family may raise a cow for a relative or neighbor. In

TABLE XXXIX

DISTRIBUTION OF THE NUMBER OF ANIMALS OWNED BY SUBAN HOUSEHOLDS

Number of Animals Owned	Number of Households
0-4	9
5-9	27
10-14	22
15-19	14
20-29	13
30-39	9
40-49	3
50+	1
Total	98

TABLE XL

DISTRIBUTION OF VALUE IN PESOS
OF ANIMALS OWNED BY
SUBAN HOUSEHOLDS

Value of Animals Owned	Number of Households
₱ 0- 99	16
100- 199	14
200- 299	12
300- 399	9
400- 499	15
500- 599	8
600- 699	7
700- 799	6
800- 899	4
900+	7
Total	98

return, the family gets every other calf. This method enables poorer families without capital to develop investments in animals. Table XLI shows the distribution of animal tenancy in Suba. As with land, animal tenants accurately reported their tenanted stock whereas animal landlords tended not to report animals raised by others.

The number of Subans tending someone else's animal far exceeds the number of Subans who own animals which others tend. Like land tenure, animal tenure tends to depend on outside ownership. There may be a greater tendency to raise an animal for a relative living in a poblacion than there is to work as tenants the land of kin living in town.

TABLE XLI

ANIMAL TENANCY AMONG SUBAN HOUSEHOLDS

Animals Tenanted	Ownership	Number of Households
None		53
Less than Half	Tenant	18
More than Half	Tenant	16
Less than Half	Owner	7
More than Half	Owner	2
All	Tenant	1
Some	Tenant & Owner	1
Total		98

Fishing. The Philippine Information Agency (1955) has said that fishing ranks third in economic importance to the Philippines after farming and livestock raising. Next to rice the single most important element in the Filipino diet is fish. In an effort to develop and manage the fishing industry the Philippine government has sponsored the development of fish ponds. Ponds were developed in Suba but failed when the ponds broke and the fish were released into the lake (Scheans, personal communication).

The economic importance of fishing in Suba is illustrated by the investment in fishing gear and the income derived from fishing, shown in Tables XLII and XLIII, respectively. About a third of the households are not involved in fishing. Approximately another third only get plants from the lake, fish for home consumption, and do not earn any money from fishing. The remainder derives some income from fishing, forming an integral part of their economic strategy. Some households pursue fishing to the exclusion of farming, and while this approach is apparently sufficient to maintain a household it has lower prestige than owning or working land.

The split within the Suban population with respect to fishing is illustrated quantitatively by the ownership of fishing gear. Of the 99 households, 35 owned no gear, 38 owned only enough gear to provide them with fish for home use, and 36 had a substantial amount of gear. These latter

TABLE XLII

HOUSEHOLD DISTRIBUTION OF THE VALUE OF FISHING GEAR OWNED IN PESOS

Value of Gear	Number of Households
₱ 0- 29	29
30- 59	3
60- 89	7
90-119	9
120-149	3
150-199	6
200-249	1
250-299	2
300-399	0
400+	7
Total	67

TABLE XLIII

HOUSEHOLD DISTRIBUTION OF INCOME FROM FISHING IN PESOS PER MONTH

Income	Number of Households
Home Use Only	31
₱ 0 - 4	10
5 - 9	4
10 - 14	2
15 - 19	5
20 - 24	3
25 - 29	1
30 - 39	1
40 - 49	2
50+	4
TOTAL	63

households derived monetary income from fishing. A total of 60 households hold lot memberships, which are required by local law for garnering resources from the lake. Another 33 households are not members. The six households for which fishing lot membership was not indicated are all assumed to be members since they all indicated some degree of involvement in fishing.

Cottage Industries. Cottage industries are an important aspect of the economic strategies of Subans, providing goods used by the household. Sometimes these activities provide an income for the household as well. Making salt, weaving, tailoring, and carpentry are the major cottage industries in Suba. Carpentry is the only one usually done by males. In the off season most males are involved with fishing or have supplementary jobs constituting an additional element in the economic strategies of households.

Goods produced for the market are bartered for goods produced by other households. Barter was the only available income for some older females. The major cottage industry performed for income is salt-making. Since this activity is limited to the dry season a female who depends on salt-making must find some other means of support during the wet season.

Jobs. In all cases jobs were recorded where an occupation was given on the census sheets and if they were regularly performed for income in cash or kind. A person

listed as performing only one occupation may engage in other activities as well. Some housekeepers, for example, also do their own weaving.

The labor force of Suba is fairly mobile and involved in diverse occupations. Table XLIV shows the place of work in January 1958 for all those normally considered residents of Suba. Over ten percent of these persons derive some income from outside the barrio. Tables XLV, XLVI, and XLVII show, respectively, the jobs held by members of the Suban labor force, by male Subans and by female Subans. The tables count some persons twice, i.e. those with two jobs, one in Suba and one outside.

The job listed for each member of the labor force was his major economic activity although many individuals engage in supplementary production of goods for home use. Subans who seemed to divide their time equally between two occupations are listed as engaged in both occupations. The vast majority of the labor force is involved in farming, fishing, and/or housekeeping. The remaining Subans are usually members of households in which there are enough other adults to conduct farming and fishing activities to free those persons to do wage work outside the barrio if they are fortunate enough to find a job.

The diversity of jobs suggests than Suban farmers are able to use their free time to engage in productive activities, contrary to the situation found among Ilokano

TABLE XLIV

MOBILITY OF THE SUBAN LABOR FORCE

Age	Place of Work			Total
	In Suba	Out of Suba	Seasonally Out	
10-14	2			2
15-19	31	4	7	42
20-24	32	6	5	43
25-29	25	4	4	33
30-34	28	2	1	31
35-39	34	1		35
40-44	25			25
45-49	26	2		28
50-54	26		1	27
55-59	16			16
60-64	11			11
65+	28			28
Total	284	18	19	321

TABLE XLV

JOBS HELD BY MEMBERS OF THE 1958 SUBAN LABOR FORCE
BY PLACE OF WORK AND AGE

Job	Age:	10-19		20-29		30-39		40-49		50-59		60+		Totals		
	Place:	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	Both
Farm		10	1	15	1	8		11		11		8		63	2	65
Housekeeper (HK)		4		19		24	1	22		20		17		106	1	107
Labor-sugar				2	4		1		2		3			2	9	11
Fish		4		6		1				1		1		13		13
Harvest		3	4		5		1				1	1		4	11	15
Lavendera					2						1				3	3
Salt-making								1				1		2		2
Labor			1		1	1	1		1		4			1	8	9
Gardener								1	1					1	1	2
Housegirl					1										1	1
Irrigator									2						2	2
Carpenter				1	1									1	1	2
Weaving						1		1		1				3		3
Student (over 6th grade)		3												3		3
Salesgirl		2	1	1	1									3	2	5
Guard				1										1		1
Storekeeper										1				1		1
Hair Culture		1												1		1
Sexton					1										1	1
Teacher				1		1								2		2
Unknown		2		7		3		5				2		19		19
Retired												5		5		5
Farm/Fish		9		13		22		9		5		3		61		61
Tend Cattle										1	1			1	1	2
Harvest/Plant						1								1		1
HK/Salting		1				1		1		2				5		5

TABLE XLV

(Continued)

Job	Age:	10-19		20-29		30-39		40-49		50-59		60+		Totals		
	Place:	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	Both
Plant/Salting		1				2								3		3
Tailor/Hair Culture				1	1									1	1	2
HK/Weaving				1										1		1
Farm/Carpenter								1		1		1		3		3
HK/Tailor								1						1		1
Totals		40	7	68	18	65	3	53	6	43	10	39	0	308	44	352

TABLE XLVI

JOBS HELD BY MALE MEMBERS OF THE SUBAN LABOR FORCE
BY PLACE OF WORK AND AGE

Job	Age:	10-19		20-29		30-39		40-49		50-59		60+	Totals		
	Place:	In	Out	In	Out	In	Out	In	Out	In	Out	In	In	Out	Both
Farm		9	1	15	1	8		11		11		8	62	2	64
Labor-sugar				2	4				2		3		2	9	11
Fish		4		6		1				1		1	13		13
Harvest		3	4		5		1				1		3	11	14
Labor			1		1	1	1		1		4		1	8	9
Gardener								1	1				1	1	2
Irrigator									2					2	2
Carpenter				1	1								1	1	2
Student (over 6th grade)		3											3		3
Guard				1									1		1
Sexton					1									1	1
Teacher				1		1							2		2
Unknown		1		1				1					3		3
Retired												2	2		2
Farm/Fish		9		13		22		9		5		3	61		61
Tend Cattle										1	1		1	1	2
Harvest/Plant						1							1		1
Plant/Saltmaking		1				2							3		3
Farm/Carpenter								1		1		1	3		3
Total		30	6	40	13	36	2	23	6	19	9	15	163	36	199

TABLE XLVII

JOBS HELD BY FEMALE MEMBERS OF THE SUBAN LABOR FORCE
BY PLACE OF WORK AND AGE

Job	Age:	10-19		20-29		30-39		40-49		50-59		60+	Totals		
	Place:	In	Out	In	Out	In	Out	In	Out	In	Out	In	In	Out	Both
Farm		1											1		1
Housekeeper (HK)		4		19		24	1	22		20		17	106	1	107
Harvest												1	1		1
Lavendera					2						1			3	3
Saltmaking								1				1	2		2
Housegirl					1									1	1
Weaving						1		1		1			3		3
Salesgirl		2	1	1	1								3	2	5
Storekeeper										1			1		1
Hair Culture		1											1		1
Unknown		1		6		3		4				2	16		16
Retired												3	3		3
HK/Salting		1				1		1		2			5		5
Tailor/Hair Culture				1	1								1	1	2
HK/Weaving				1									1		1
HK/Tailor								1					1		1
Total		10	1	28	5	29	1	30	0	24	1	24	145	8	153

farmers by Espiritu and Hunt (1964). With the resources of the lake available it seems likely that the Suban farmer uses relatively more of his spare time in some profitable venture.

Anderson (1972) has remarked upon the high percentage of marginally employed people in Sisya, fully 22 percent of the labor force. Fewer than ten percent of the labor force of Suba (even excluding housekeepers from the labor force) could be considered marginally employed. The multiple occupational involvement Anderson found among marginally employed households in Sisya is virtually universal in Suba.

Takahashi (1970) has analyzed the jobs held by the members of a central Luzon barrio. The three major activities were transportation, shopkeeping, and buntal hat weaving, the local cottage industry. Since the data from Suba were taken some ten years before Takahashi's study, it is possible that some Subans have since become involved in transportation as the need for mobility increases. Buntal hat weaving was the only occupation open to Kabikuran females besides housekeeping, a situation not characteristic of Suba as Table XLVII illustrates.

The wage earners are usually employed outside the barrio and send or bring their wages home. Most males who are not engaged in agriculture or fishing earn wages. Females in the barrio tend to be producing goods for barter in the market. The females outside of the barrio who are

not seasonal agricultural workers all earn cash incomes.

Economic Indices. There are five major income-producing activities in Suba: farming, animal raising, fishing, barter from household industry production and wage work. Each household seeks to maximize its economic security and prestige by involvement in one or more of these activities. Its activities are directly affected by its ties to other households and by its social ambitions. Thus, economic strategies are not solely a matter of economics; however, it is necessary to view them as a matter of economics here in order to cope with the topic at all.

The diversity of economic activity is a measure concerning farming and animal raising taken directly from the census sheets. The number of kinds of animals raised was added to the number of kinds of crops grown and of fruit trees raised. Some of the supplemental crops, animals and trees raised may have provided small cash incomes, but usually these items were consumed at home. Thus, economic diversity is an indirect measure of the diversity of the diet as well. Table XLVIII shows the distribution of the diversity of economic activity for Suban households. The average diversity was just over 14.

To a certain extent diversity measures the involvement of the household in farming and animal raising, with a lower number indicating less involvement in those activities. The index is also a rough measure of the relative poverty

TABLE XLVIII

DIVERSITY OF ECONOMIC ACTIVITY AMONG SUBAN HOUSEHOLDS

Number of kinds of crops, animals and trees raised	Number of Households
0- 4	7
5- 9	15
10-14	25
15-19	32
20-24	16
25-29	3
Total	98

of those involved in farming, especially for households with a very low diversity rating.

Geertz (1971) has noticed a trend toward diversification and away from rice monoculture in Southeast Asia. While rice monoculture is still strong in central Luzon (Lewis 1971), it has not characterized Ilocos Norte for some time, if ever. Most households are involved in raising several types of foods, cash crops (sugar cane and Virginia tobacco - though production of these was rare in 1958), and animals.

The second major economic index is income. Three types of income were measured for each household: income in rice, income from barter, and income in cash. Income from farming is measured in cavans (100 lbs.) of unhusked

rice (palay), clearly the most important crop grown. Income from barter is indicated by economic participation in cottage industries where the goods produced are channeled into the market. Monetary income can be from fishing, wage employment, or from relatives who send money home. Whatever the source, the monetary income per month measures the average total monthly income.

Income figures were derived directly from the census sheets with no attempt at readjustment. Income expressed in cavans of rice was assumed correct, although in many cases it was not. Income from barter was recorded if household members regularly produced cottage industry goods for the market. Monetary income was taken as recorded, or as estimated if income from fishing was implied.

Tables XLIX, L, and LI show the distribution of rice income, barter income, and money income, respectively, for households in Suba. Reported incomes in rice are generally well below the survival needs of the average family of five, with the average reported income only 3.6 cavans. Subans were probably lying systematically about their rice incomes as well as using income from other sources to buy rice or sweet potatoes.

Barter was more important than Table LI indicates. Several people produced goods for barter occasionally, but not regularly enough to consider barter a part of their income for the purposes of this table. Also, as mentioned

TABLE XLIX

RICE INCOME PER YEAR IN CAVANS OF PALAY FOR SUBAN HOUSEHOLDS

Income	Number of Households
0	4
1	14
2	31
3-4	20
5-6	14
7-8	7
9-10	4
11-14	2
Unknown	3
Total	99

TABLE L

AMOUNT OF INCOME DERIVED FROM BARTER BY SUBAN HOUSEHOLDS

Income	Number of Households
All	1
Part	6
None	91
Unknown	1
Total	99

TABLE LI

MONETARY INCOME IN PESOS PER MONTH FOR SUBAN HOUSEHOLDS

Income	Number of Households
₱ 0- 4	48
5- 9	11
10-14	10
15-19	4
20-24	7
25-39	6
40-59	5
60-99	4
100+	2
Some, amount unknown	2
Total	99

earlier, even if goods produced by households are not channeled into the market this production still contributes significantly to the economic status and strategy of the household.

Cash incomes vary widely from household to household, with the majority earning very little. Most cash income comes from fishing, although outside sources are very important for some households. One spinster was supported by two sisters in Manila. Families with large cash incomes are usually fairly well off and of larger average size than other households in Suba. Generally, they have a greater

number of productive members involved in a greater number of economic activities. Anderson (1972) has found that the range of annual cash earnings for Sisyano households varied from ₱30 to ₱1,000. This range is roughly the same as for Suba, except that some households in Suba apparently have no cash income.

The final economic index is a direct measure of economic strategies. A computer analysis of the economic strategies of Suban households was developed using previously coded information. A household was said to be involved in fishing if it owned substantial fishing gear. A household was involved in farming if it had any coded tenancy status other than "0" (not a tenant, landlord or owner). If the family owned animals worth ₱200 it was involved in the economic strategy of animal raising, since this figure probably implies that one of the major animals, a cow or water buffalo, was kept. Finally, the household was said to be involved in barter if there was any income from barter, as explained earlier. All possible combinations of the four alternatives were provided for in the computer program with an "other" category for households which did not meet any of the above criteria, such as the spinster being supported by her two sisters in Manila.

This index of economic strategies may have stretched the reliability of the census information beyond the point of reasonable results, but an effort is made nevertheless

in the hope that future work in Suba and elsewhere can improve the quality and extent of the knowledge available on the economic activities of specific households and barrios.

Table LII shows the economic strategies used by Suban households. The average strategy in Suba involves two activities. Only twelve households are not involved in farming to a significant degree. Of these, the nine households not involved in fishing are very small and/or fairly poor. Of the fifteen possible strategies, only eight are pursued, and 74 of the 99 households are involved in just three of the strategies.

Reliability of Economic Information. Chapter II discusses the method by which a scale was developed to assess the reliability of the economic information provided by Suban informants. The results are shown in Table LIII.

Based on the numerical values assigned to each level of reliability in the coding system, the average of the reliability of economic information provided by Suban informants was 2.1, or "relatively reliable." As noted in Chapter II, the standard for judging reliability is not rigorous, especially since the Subans of 1958 had more animals, better housing, and higher monetary incomes than the households Lava studied in 1935.

Households reporting some monetary income tended to obtain higher ratings of reliability. This tendency suggests that the information was more accurately relayed by

TABLE LII

ECONOMIC STRATEGIES OF
SUBAN HOUSEHOLDS

Strategy	Number of Households
Fishing	3
Farming	12
Animal Raising	2
Barter	4
Fishing & Farming	7
Farming & Animal Raising	37
Farming, Barter & Animal Raising	3
Farming, Fishing & Animal Raising	25
Other	3
Total	99

TABLE LIII

RELIABILITY OF ECONOMIC INFORMATION
FOR SUBAN HOUSEHOLDS

Reliability	Number of Households
Unreliable	8
Relatively Unreliable	19
Relatively Reliable	22
Reliable	48
Unknown	2
Total	99

informants or that the conversion of money into rice income was overly generous. Greater accuracy in reporting could be a result of greater awareness of the specific amount of cash received or of lesser fear of higher taxes if the income was reported accurately.

An independent check on the assessment of the accuracy of the information on rice incomes can be made by comparing average landholdings to average yields to figure the number of cavans of palay an average family should expect to harvest. Estimates for the yield of rice in cavans of palay per hectare for the Philippines vary from 15 to 50 (Grist 1959; USDA 1961; Lava 1938; Takahashi 1970). The figure given by the Philippine Department of Commerce and Industry (1966) is used here. The Department estimates the average yearly yield to be 27 cavans of palay per hectare. Yields in the Ilocos area are lower as a result of the varieties of rice used; however, more fields are irrigated so the average yield is probably not far from the national average. Even assuming the average holding in Suba to be one-half hectare the great majority of reported incomes fall below 10-15 cavans of palay, indicating lower yields or systematic underrepresentation of rice incomes. (See Table XLIX.) Even taking into account the landlord's share the reported incomes of tenants in cavans of palay are below the expected figures.

A thorough study of field sizes, average yields and

incomes is needed to verify the yield of Suban riceland and to judge the accuracy of the reported incomes. In the only case where the exact size of a household's landholding was known, the household reported a yield of 8 cavans from 0.33 hectare, an estimate which reinforces many of my assumptions as to field sizes and yields. These data lend credence to the conclusion that other Subans are underreporting their rice incomes.

CHAPTER IV

EVALUATION AND CONCLUSION

I. CENSUS-TAKING

A thorough and useful census of small populations such as that of Suba should include information on all individuals in the population and information concerning each household. A format for recording the census data is not suggested here. A separate census sheet for each individual might be the most useful way to collect the data to avoid any possible confusion. Data for the household should be collected first. The name of each individual should be listed and his relationship to the household and other members of the household should be recorded. In addition, the age, year of birth, sex, religion, place of origin, cause of immigration, time of immigration, occupation, place of work, past places of work, past occupations, times when the individual has worked out, money the individual has sent home, marital status, and education should be collected for each individual present. For females, the name, age and year of birth for each of her children should also be recorded. For those children who have died and for the dead spouses of household members the cause of death, year of death, place of death and age

at death should be collected. For children no longer in Suba the place of residence, time of emigration, cause of emigration, permanence of emigration, education and marital status at the time of emigration and at the time of the census should be listed. If the census-taker is particularly interested in migration, he might also record this information concerning other relatives who have left the area. In the instances where the informant is unsure of the information given, the census-taker should note that fact. Also, wherever possible the census-taker should endeavor to cross-check the information he has obtained with available records and through other informants.

For households, the sitio of residence, number of individuals, type of family, tenancy, land owned, fields worked, income from agriculture, income from other sources (which should be listed), type of land owned, house ownership, house construction, fishing gear owned, fishing lot membership, animals owned, value of animals, animal tenancy, crops grown and goods produced for barter and household consumption should be recorded. A schedule of income, expenses, and consumption for a substantial period of time, hopefully thirty days or more, would greatly add to the reliability of the household data. However, for a census of a population engaged in different economic activities from those prevalent in Suba, the appropriate economic information must be collected and the correspond-

ing computer program modified accordingly.

These suggestions as to the kinds of data which should be collected by a census-taker do not extend much beyond the census material recorded by Scheans. The basic objective of the suggestions as they relate to information Scheans did not gather is to establish a time perspective by recording the dates of events wherever possible. Ideally, this objective is accomplished by taking censuses at regular intervals. Therefore, it is further suggested that a census of Suba be taken in the near future attempting to utilize the format recommended here.

It is also possible and perhaps desirable to use the method proposed in this thesis to develop a form for census-taking utilizing the coding devised for computer analysis. The census-taker could record the information only in coded form. As a safeguard, however, due to the probable need to alter the codes somewhat as the census progresses and after it is finished, and to enable subsequent analysts to deal with the raw data it is suggested that all of the raw data be recorded in longhand as well.

II. COMPUTER ANALYSIS

The basic analysis developed in this thesis can be applied with reasonable ease to censuses of other small populations. A rudimentary knowledge of FORTRAN IV is required, such as was acquired by the author in approxi-

mately two months. Eventually, it may be possible to have the programs in a generalized form so that the insertion of a few specific cards, along with the basic data cards, will suffice to obtain an analysis of the population.

Use of the method insures greater comparability between analyses of future censuses by eliminating any variations which would result from the use of different methods. The method also provided a reasonably accurate and thorough analysis of the Suban population, despite the lack of some desirable information and the varying quality of the available data. Thus, the method provides a technique for salvaging data from earlier censuses taken without the benefit of a standardized format or where incomplete information is available.

III. THE SUBA PATTERN

The substantive findings allow a general pattern for Suba to be outlined. Compared to other barrios in the Philippines (Lewis 1972; Takahashi 1970; Anderson 1972; Nydeggers 1966) Suba has an older population and one with lower fertility. The religion of Subans fits Ilocos Norte patterns of 1958. Scheans (personal communication) has noted that since then the distribution of religions for Suba has changed somewhat. Most notable has been the appearance of some protestants.

Sitio differences in Suba are important socially and

to a certain extent economically, but these differences do not achieve the level of significance found in Sisya by Anderson (1972). Sisya is much larger than Suba and of composite ethnic origin; both facts may help explain the differences between the two barrios.

There is no real data on the education of Subans. There is only the indication that some persons were attending school at the time of the census. It is by no means certain that all those attending school were indicated as doing so on the census sheets.

Marital and mortality data are poor. The growth rate for Suba is therefore subject to uncertainties from both sources. The factors which affect the growth rate are even less clear as Benedict aptly remarked (1972).

> Except under the harshest ecological and economic conditions, human beings do not regulate their populations in relation to the food supply, but in relation to the prestige supply. (Benedict 1972, p. 88)

Prestige in Suba is closely related to economic position and strategy. The interaction of social and economic factors is complex and pervasive in Suban society. Social structure has not been thoroughly examined here, but an understanding of it is essential to comprehend Suban economics. Strategies are diverse and varied. They center on the highly prestigious working of the land, which most households supplement with other activities. An in-depth study of several specific households would be

very useful in gaining a deeper understanding of the nature of Suban social structure and economics and their inter-relationships.

The economy of Suba is fairly representative of national trends, but it contrasts sharply with those of other specific barrios. On the other hand, the social and population structure of Suba is representative of provincial trands rather than national ones. Suba exhibits most of the distinctive features of Ilokano and Filipino barrios, but it has its own distinctive features as well.

The distinctive features of Suba include an unusally high sex ratio in a province noted for low sex ratios. Like the province, but unlike the Philippines, Suba had moderate fertility levels. Lower fertility was indicated by a low dependency ratio, a low percentage of children under 15, a median age almost five years higher than the national average, a lower number of children per ever-married female, a low fertility ratio, a slightly higher age at marriage, a greater number of adults who never marry and a provincial growth rate roughly half that of the nation. This lower fertility implies a lower growth rate also, but a good estimate will have to wait until the completion of another census within a reasonable time. The barrio was overwhelmingly Aglipayan in religion, but this pattern may be changing.

These conclusions should not be taken too literally.

The data are not always clear or of good quality. It is hard to estimate trends from one census and the small number of individuals involved creates uncertainty in the accuracy of many figures. In addition, Kunstadter (1972) has illustrated the importance of time perspective in popluation studies. Of the two Thai groups he compared the Karen seem to be more successful demographically. They are expanding the area they occupy and have a high growth rate. The Lua, however, have had a fairly steady population and occupied a more or less fixed area. These factors make it seem as though the Karen are more successful, but Kunstadter noted that the area available for expansion will soon be gone. When that happens he wonders which population will prove to be more successful demographically, implying that the Lua might well be since the Karen place a heavy emphasis on high fertility.

The economy of Suba lends the impression that stability exists and that there is a fairly favorable labor to resources ratio. The economy of Suba, with more resources than the average barrio, may have an attraction for males greater than the surrounding barrios. This differential could prove to be counter-productive given the high sex ratio among younger Subans. It could lead to a high growth rate, seriously impairing the ability to make a reasonable living.

Suban households are based on an economy of rice

farming. In addition, fishing, animal raising, gardening, supplementary crops, outside jobs and cottage industries play roles in the economic structure roughly in that order of importance. The diversity of crops, animals and trees raised is typical of the Ilocos area and much higher than other areas of the Philippines. Cash incomes are low, incomes in kind are slightly higher even though many persons refused to disclose their full rice income. The wealthiest families in the barrio have what at best can be called moderate incomes. Multiple involvement in the major economic strategies is the rule. The exceptions are likely to be small and poor households or ones with high cash incomes from some source. The reliability of the information given by households was questionable. Judged by starvations levels the information was only relatively reliable. Persons with cash incomes tended to be more reliable than those without. In any event, while Subans are better off than the Ilokanos Lava studied (1938), they still generally live in poverty.

According to Pascual (1966), patterns of migration in the Philippines may be changing. Subans find it difficult to make a living wherever they go, and fewer of them are choosing to migrate. Even in the 1920's it was probably inaccurate to speak of emigration from Suba because the average Suban left with the intention of returning. Since Suba was a fairly young barrio at that time relative-

ly fewer of its members sought to migrate. Most of those that did go have returned, improving their economic and social position considerably. However, since most Suban migrants have no special marketable skills there is decreasing incentive to migrate. Migration has become a strategy increasingly adopted by females. The effects of the large number of young females going to Manila are unclear. Perhaps many of the remaining young males will have to wait for brides, raising the age at marriage for one or both sexes. This factor may in turn lead to a smaller number of children per ever-married female, but the percentage of females who will ever marry may rise.

There are reasons for optimism and pessimism in Suba. The population has both the potential for rapid growth and for achieving some measure of control over the rate and pattern of growth. In either case, a new census should clarify some of the factors operating on the Suba population, both ones noted here and others. Certainly, a new census would correct many errors in this thesis and confirm many suspicions.

IV. RECOMMENDATIONS

Since the computer programs must be altered somewhat whenever a different census is coded and analyzed, the task would be best accomplished by persons who are familiar with the programs and with census analysis. For this

reason, the method would be most useful if an organization is used or established whose members would perform this service. Such an organization might be called the "Center for the Study of Small Populations." It is also recommended that the possibility of obtaining funds to establish and maintain such a center from independent sources such as foundations be investigated.

With respect to the substantive findings presented in Chapter III, it is recommended that another census of Suba be taken. It would be useful to have more information on the spacing of children in Suba and the means by which this is accomplished. The fertility of urban Ilokanos deserves study, as does the study of fertility levels in other specific Ilokano and Filipino barrios. Especially important in these studies would be an attempt to detail as precisely as possible the ways in which culture influences fertility. It would be very helpful to have accurate and detailed information on the fertility and mortality levels of the Philippines as a whole, but this requires reliable information on a local level as well.

Population changes in Suba deserve investigation, which should be revealed through a new census, including changes in the dependency ratio, the sex ratio, religion, the growth rate and life expectancy. In addition, it would be useful to investigate the factors which influence the sex ratio of a population.

Even though Scheans collected no data on education it would be useful to have this information at the time of a second census. Since fairly good education figures for Paoay exist from the 1960 census this data can be used as the basis for comparisons with the new census.

A thorough economic study of the barrio would be extremely useful, including a map of the barrio, an evaluation of the size and owner of each piece of land, and a study of the uses of the land. Studies of the value of the types of land and the history of land transfers are also recommended after the above information has been collected. Scheans has some of this information for Suba from tax records and certificates, but these records are inadequate for a thorough study. They indicate neither the size nor type of land, indicating only the tax registration number and the assessed value of the land.

A study of the relationships between economy, technology and social structure would be a difficult yet immensely significant task. Perhaps this task might be best accomplished by a study of several of the households in Suba, ensuring that households representing all of the basic economic strategies are included. A consumption study such as the one made by Lava (1938) would provide some much needed background for assessing the actual economic status of Subans.

Migration out of Suba to other places in the Philip-

pines also deserves investigation.

Ultimately, the goal of any census method is to process information so that comparisons among populations can be made as easily and productively as possible. In order to realize the potential usefulness of this method it should be applied to as many censuses of small populations as possible.

SOURCES CONSULTED

Anbenoja, Macrina K. 1976. Current Fertility in the Eastern Visayas: An Application of the "Own-Children-Under-Five" Method, Philippine Quarterly of Culture and Society 4:110-129.

Anderson, James N. 1969. Buy-and-Sell Economic Personalism: Foundations for Philippine Entrepreneurship. Asian Survey 9:641-668.

_____. 1972. Social Strategies in Population Change: Village Data From Central Luzon. SEADAG Papers on Problems of Development in Southeast Asia. New York, The Asia Society.

Barclay, George W. 1958. Techniques of Population Analysis. New York, John Wiley & Sons.

Benedict, Burton. 1972. Social Regulation of Fertility. In G.A. Harrison and A.J. Boyce, eds., The Structure of Human Populations. Oxford, Clarendon Press. pp. 73-89.

Chaffee, Frederic H., et al. 1969. Area Handbook for the Philippines. Washington, D.C., U.S. Government Printing Office.

Chandrasekaran, C. 1966. Population Programmes in ECAFE Countries. In Population Institute, Philippines, First Conference on Population, 1965, pp. 37-54. Quezon City, University of Philippines Press.

Clarke, John I. 1972. Geographical Influences upon the Size, Distribution, and Growth of Human Populations. In G.A. Harrison and A.J. Boyce, eds., The Structure of Human Populations, pp. 17-31. Oxford, Clarendon Press.

Concepcion, Mercedes B. 1966a. Demographic Factors in Philippine Development. In Population Institute, Philippines, First Conference on Population, 1965, pp. 80-84. Quezon City, University of Philippines Press.

_____. 1966b. The Population of the Philippines. In Population Institute, Philippines, First Conference on Population, 1965, pp. 185-199. Quezon City, University of Philippines Press.

Dobby, E.H.G. 1951. Southeast Asia. New York, John Wiley & Sons.

Eggan, Fred. 1941. Some Aspects of Culture Change in the Northern Philippines. American Anthropologist 43:11-18.

_____. 1954. Social Anthropology and the Method of Controlled Comparison. American Anthropologist 56:743-763.

_____. 1960. The Sagada Igorots of Northern Luzon. In George Peter Murdock, ed., Social Structure in Southeast Asia. New York, Viking Fund Publications in Anthropology, No. 29.

Espiritu, Socorro C. and Chester L. Hunt, eds. 1964. Social Foundations of Community Development. Manila, R.M. Garcia Publishing House.

Flieger, Wilhelm and Brigida Koppin. 1973. Births, Deaths, and Migration in the Eastern Visayas, 1971-72: Results of Two Years of Sample Registration. Philippine Quarterly of Culture and Society: 1:241-273.

Fonollera, Raymundo E. 1966. Labor Intensity in Philippine Agriculture. In Population Institute, Philippines, First Conference on Population, 1965, pp. 493-496. Quezon City, University of Philippines Press.

Food and Agricultural Organization of the United Nations. 1954. Rice and Rice Diets. FAO Nutritional Studies, No. 1. Rome, Italy.

Foster, George M. 1965. Peasant Society and the Image of the Limited Good. American Anthropologist 67:293-315.

Geertz, Clifford. 1971. Agricultural Involution: The Process of Ecological Change in Indonesia. Berkeley and Los Angeles, University of California Press.

Ginsburg, Norton, ed. 1958. The Pattern of Asia. Englewood Cliffs, New Jersey, Prentice-Hall.

Grist, D.H. 1959. Rice. 3rd ed. New York, John Wiley & Sons.

Gutierrez, Jose S. 1966. Agricultural Productivity and Population Increase: The Philippine Case. In Population Institute, Philippines, First Conference on Population, 1965, pp. 469-492. Quezon City, University of Philippines Press.

Hanks, Lucien M. 1972. Rice and Man, Agricultural Ecology in Southeast Asia. Chicago, Aldine, Atherton.

Hardin, Garrett, ed. 1969. Population, Evolution, and Birth Control. San Francisco, W.E. Freeman and Company.

Harris Corporation. 1977. General Specification Harris Fortran Compiler. Fort Lauderdale.

Harrison, G.A. and A.J. Boyce, eds. 1972. The Structure of Human Populations. Oxford, Clarendon Press.

Hart, Donn V. 1965. From Pregnancy Through Birth in a Bisayan Filipino Village. In Southeast Asia Birth Customs, Three Studies in Human Reproduction. New Haven, HRAF Press.

_____. 1971. Philippine Rural-Urban Migration: A View from Caticugan, A Bisayan Village. Behavior Science Notes 6:103-136.

Hauser, Philip M. 1966a. Population and Economic Development. In Population Institute, Philippines, First Conference on Population, 1965, pp. 5-31. Quezon City, University of Philippines Press.

_____. 1966b. Research Problems in Demography. In Population Institute, Philippines, First Conference on Population, 1965, pp. 128-137. Quezon City, University of Philippines Press.

Henson, Mariano A. 1948. Philippine Tables of Equivalents. San Fernando, Philippines, Ing Katiwala Press.

Hooley, Richard W. 1963. Saving in the Philippines 1951-1960. Quezon City, University of Philippines Press.

Huke, Robert E. 1963. Shadows on the Land: An Economic Geography of the Philippines. Manila, the Bookmark.

Hunt, Chester L., et al. 1963. Sociology in the Philippine Setting, revised edition. Quezon City, Phoenix Publishing House.

Keesing, Felix M. 1962. The Ethnohistory of Northern Luzon. Stanford, California, Stanford University Press.

Kim, Yun. 1972. Net Internal Migration in the Philippines, 1960-1970. Bureau of the Census and Statistics, Journal of Philippine Statistics 23(2):ix-xxvii.

Kroeber, A.L. 1928. Peoples of the Philippines. New York, American Museum of Natural History, Handbook Series, No. 8.

Kunstadter, Peter. 1972. Demography, Ecology, Social Structure and Settlement Patterns. In G.A. Harrison and A.J. Boyce, eds., The Structure of Human Populations, pp. 313-351. Oxford, Clarendon Press.

Lasker, Bruno. 1931. Filipino Immigration to Continental United States and Hawaii. Chicago, University of Chicago Press.

Lava, Horacio. 1938. Levels of Living in the Ilocos Region. Institute of Pacific Relations, Philippine Council, Study No. 1.

Leibenstein, Harvey. 1954. A Theory of Economic-Demographic Development. Princeton, New Jersey, Princeton University Press.

Lewis, Henry T. 1971. Ilocano Rice Farmers, A Comparative Study of Two Philippine Barrios. Honolulu, University of Hawaii Press.

_____. Unpublished, Migration in the Philippines: The Second Wave. Unpublished paper.

Lorimer, Frank. 1954. Culture and Human Fertility. Zurich, UNESCO.

_____. 1966. Analysis and Projections of the Population of the Philippines. In Population Institute, Philippines, First Conference on Population, 1965, pp. 200-314. Quezon City, University of Philippines Press.

Louden, Robert K. and George Ledin, Jr. 1972. Programming the IBM 1130. 2d ed. Englewood Cliffs, New Jersey, Prentice-Hall.

Luna, Telesforo W., Jr. 1966. The Land and Natural Resources of the Philippines. In Population Institute, Philippines, First Conference on Population, 1965, pp. 161-184. Quezon City, University of Philippines Press.

Madigan, Francis C. and Rosalio O. Avenceña. 1964. Philippine Fertility and Mortality with Special Reference to the North Mindinao Region: A Critique of Recent Estimates. Part I: The Philippines in General. Philippine Sociological Review 12:35-42.

Maring, Ester G. and Joel M. Maring. 1973. Historical and Cultural Dictionary of the Philippines. Metuchen, New Jersey, The Scarecrow Press.

Moerman, Michael. 1968. Agricultural Change and Peasant Choice in a Thai Village. Berkeley and Los Angeles, University of California Press.

Nydegger, William F. and Corinne Nydegger. 1966. Tarong: An Ilocos Barrio in the Philippines. Volume VI of Beatrice B. Whiting, ed., Six Cultures - Studies in Child Rearing. New York, John Wiley & Sons.

Pascual, Elvira M. 1966. Internal Migration in the Philippines. In Population Institute, Philippines, First Conference on Population, 1965, pp. 315-353. Quezon City, University of Philippines Press.

Phelan, John L. 1959. The Hispanization of the Philippines. Madison, Wisconsin, University of Wisconsin Press.

Philippine Delegation. 1965. Status of Manpower and Educational Planning in the Philippines. Philippine Journal of Public Administration 9:128-144.

Philippine Information Agency. 1955. The Philippines, a Handbook of Information. Manila.

Philippines, Bureau of the Census and Statistics. 1961. Census of the Philippines 1960, Volume I, Population and Housing. Report by Province, Nos. 21 & 22 (Ilocos Norte & Ilocos Sur).

_____. 1972. Vital and Travel Statistics. Journal of Philippine Statistics 23(2):1-19.

Philippines, National Census and Statistics Office. 1974. 1970 Census of Population and Housing, Final Report, Volume I, Ilocos Norte.

_____. 1975. Population Dimension of Planning III, Population Projections of Cities and Municipalities in the Philippines 1970-2000.

Philippines, Department of Commerce and Industry, 1966. The Philippines, A Handbook of Economic Facts and General Information. Research and Economic Division.

Philippines Free Press 49(5). (Saturday, February 1, 1958).

Population Institute, Philippines. 1966. First Conference on Population, 1965. Quezon City, University of Philippines Press.

Pratt, William F. 1966. Illustrative Projections of School Enrollment. In Population Institute, Philippines,

First Conference on Population, 1965, pp. 389-422. Quezon City, University of Philippines Press.

Reyes, Wilfredo L. 1966. Philippine Population Growth and Health Development. In Population Institute, Philippines, First Conference on Population, 1965, pp. 423-468. Quezon City, University of Philippines Press.

Rogers, Everett M. 1969. Modernization Among Peasant, The Impact of Communication. Chicago, Holt, Rinehart and Winston.

Romani, John H. 1956. The Philippine Barrio. The Far Eastern Quarterly 15:229-237.

Scheans, Daniel J. 1963. Suban Society. Philippine Sociological Review 11:216-235.

_____. 1964. The Apayao of Ilocos Norte. Ethnology 11: 394-398.

_____. 1965. The Ilocano: Marriage and the Land. Philippine Sociological Review 13:57-62.

_____. 1966. Anak Ti Digos, Ilokano Name Changing and Ritual Kinship. Philippine Sociological Review 14:82-85.

SEADAG Reports. 1972. Ad Hoc Population Seminar. Report of SEADAG Meeting, June 5-7, 1972, Washington, D.C.

Seng, You Poh. 1966. Some Aspects of the Determinants of Population Growth. In Population Institute, Philippines, First Conference on Population, 1965, pp. 55-69. Quezon City, University of Philippines Press.

Simkins, Paul D. and Frederick L. Wernstedt. 1963. Growth and Internal Migrations of the Philippine Population, 1948 to 1960. Journal of Tropical Geography 17:197-202.

Spencer, J.E. 1954. Land and People in the Philippines. Berkeley and Los Angeles, University of California Press.

Stycos, J. Mayone. 1955. Family and Fertility in Puerto Rico. New York, Columbia University Press.

_____. 1969. Problems of Fertility Control in Underdeveloped Areas. In Garrett Hardin, ed. Population, Evolution, and Birth Control pp. 316-334. San Francisco, W.E. Freeman.

Takahashi, Akira. 1970. Land and Peasants in Central Luzon, Socio-Economic Structure of a Philippine Village. Honolulu, East-West Center Press.

Turnbull, Colin M. 1972. Demography of Small-Scale Societies. In G.A. Harrison and A.J. Boyce, eds., The Structure of Human Populations, pp. 283-312. Oxford, Clarendon Press.

United Nations. 1950. The Philippines. In Economic Development in Selected Countries, Plans, Programmes, and Agencies, Volume II, pp. 143-180. New York, Department of Economic Affairs.

_____. 1959. Demographic Yearbook 1958. Tenth Issue, New York.

_____. 1964a. Demographic Yearbook 1963. Fifteenth Issue. New York.

_____. 1964b. Report of the Asian Population Conference and Selected Papers. New York, Economic Commission for Asia and the Far East.

_____. 1967. Proceedings of the World Population Conference, Belgrade, 30 August-10 September 1965. New York, Department of Economic and Social Affairs.

_____. 1971. Demographic Yearbook 1970. Twenty-second Issue. New York.

_____. 1973a. Demographic Yearbook 1972. Twenty-fourth Issue. New York.

_____. 1973b. Statistical Yearbook 1972. Twenty-fourth Issue. New York.

United States, Bureau of the Census, 1905. Census of the Philippine Islands. Volume I. Washington, D.C., U.S. Government Printing Office.

United States, Department of Agriculture. 1961. The Philippines, Long-Term Projection of Supply of and Demand for Selected Agricultural Products. ERS-Foreign-34.

Vandoverbergh, Morice. 1956. Iloko-English Dictionary. Baguio, Philippines, Catholic School Press.

Weiss, Kenneth M. 1973. Demographic Models for Anthropology. Memoirs of the Society for American Archeology, No. 27; Issued as American Antiquity, 38(2,2).

Wentworth, Edna Clark. 1941. Filipino Plantation Workers in Hawaii. Institute of Pacific Relations, American Council, Studies of the Pacific, No. 7.

Wernstedt, Frederick L. and Paul D. Simkins. 1965. Migrations and the Settlement of Mindinao. Journal of Asian Studies 25:83-103.

Wernstedt, Frederick L. and J.E. Spencer. 1967. The Philippine Island World, A Physical, Cultural, and Regional Geography. Berkeley and Los Angeles, University of California Press.

APPENDIX A

FORM OF CENSUS DATA SHEETS

99

C E N S U S

BARRIO SUBA, PAOAY, ILOCOS NORTE
JANUARY, 1948

(1) NAME OF HOUSEHEAD Francisca Hernandez (Ventura)
(2) SEX F (3) AGE 50 (4) RELIGION AG A. ALI? Yes
(5) DISTRICT E (6) PUROK #1 (7) SITIO
(8) PLACE OF ORIGIN San Nicholas (9) WHEN MOVED HERE 1941
(10) FATHERS NAME Dario Hernandez - San Nicholas
(11) AGE 70 (12) ALIVE No (13) COD Old age
(14) MOTHERS NAME Vicenta Tolentino
(15) AGE 65 (16) ALIVE No (17) COD Old age
(18) PARENTS OTHER SPOUSES A. NONE X
(19) NAME (20) AGE (21) ORIGIN
A. B. C.
A. B. C.
(22) DID THEY HAVE CHILDREN? MALES. FEMALES.
(23) PRESENT SPOUSES NAME Santiago Ventura COD Typhoid
(24) AGE 45 (25) ORIGINS. Nich. (26) MARRIED BEFORE
(27) CHILDREN BY PRESENT SPOUSE ALIVE/DEAD

NAME *I/H	AGE	SEX	M/S	COD
1. Mariano V.	33	M	S	
2. Estrella V.	29	F	M	
3. Samso V.	27	M	M	
*4. Alberto V.	25	M	S	
*5. Anacleto V.	22	M	S	
6.				
7.				
8.				
9.				
10.				

(28) OTHER SPOUSES None

NAME	AGE	ORIGIN	CAUSE OF SEPARATION
1.			
2.			
3.			
4.			
5.			

(29) CHILDREN BY THESE	AGE	SEX	M/S	COD
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Abbreviations:
M = Male
F = Female
A = Aglipayan
C = Catholic
HK = Housekeeper
N = None
P = Protestant
M/S = Married/Single
I/H = In House
Cod = Cause of Death

(99)

(30) OTHER PEOPLE LIVING WITH FAMILY, None

	NAME	AGE	SEX	RELATION	EMPLOYMENT
1.					
2.					
3.					
4.					
5.					

(31) OCCUPATIONS — INCOME-ESTIMATE

A. HOUSE HEAD HK — 2 Cavans
B. SPOUSE
C. OTHERS Sons - laborers — ₱ 1500 a week
D.
E.

(32) FAMILY MEMBERS WHO HAVE WORKED OUTSIDE THE PROVINCE.

	NAME	WHERE	WHEN	JOB
1.	Alberto	Tarlac	1957-58	Cutting
2.	Anacleto	Tarlac	5 mo.	Cane
3.				
4.				
5.				

(33) LANDS — AMOUNT — VALUE — *Tenants

A. Irrig. Rice — House lot is
B. Unirrig. Rice — Euselio Tolentino's
C. Pasture
E. Forest — None
F. Fishing Lot Member

(34) FISHING GEAR — No. — VALUE

A. Sigay -
B. Tabukol -
C. Others 2 tarik - home use
D. Rakit
E. Estimate of Income

(35) CROPS — No. of Fields — Market

A. Pagay
B. Tabaco
C. Bawang
D. Otong 1 field 2/3 - 1/3*
E. Camates
F. Paria
G. Bilidan
H. Mais
I. Tarong
J. Balatong
K. Onas
L. Mani
M. Capas
N. Patani
O. Others

(36) TREES Etc. — UNITS — MARKET

A. Papaya 1
B. Saba
C. Niag
D. Radish 4
E. Manga
F. Caimeto
G. Maguey
H. Buoa
I. Pakak -
J. Karmay
K. Gaubana
L. Capasanglay
M. Others

(37) ANIMALS — NUMBER — VALUE

A. Muang
B. Baca 1 male - own
C. Baboy 1 - own
D. Calding -
E. Manok 4 hens, 1 rooster, 20 chicks
F. Pato -
G. Turki -
H. Aso -

*Eusebio Tolentino

APPENDIX B

CODING SYSTEM FOR CENSUS DATA CARDS

The following system contains the key used to code the census data cards. The column number refers to the column on the data card in which the information described in the category was recorded.

Column	Category	Codes
1-2	Household Number	01-99
3-5	Individual Number	001-999
7	Sex	Male = 0
		Female = 1
8	Life Condition	Alive = 0
		Dead = 1
9-10	Age	00-98
		All over 98 = 99
11	Religion	Aglipayan = 0
		Protestant = 1
		Catholic = 2
		Other = 3
		None = 4
		Not Given = 5
12-14	Year Born	000-999

Column	Category	Codes
16	Sitio	Libtong = 0
		Tacnir = 1
		Eastern = 2
		Central = 3
17-18	Place of Origin	Suba = 00
		Baay = 01
		Nanguudan = 02
		Dingras = 03
		San Nicholas = 04
		Calayab = 05
		Laoag = 06
		Nagbacalan = 07
		Paoay = 08
		Gabu = 09
		Batac = 10
		Hawaii = 11
		Kalayan = 12
		Balacad = 13
		Currimao = 14
		Unknown = 15
		Cagayan = 16
19	Whereabouts	In home = 0
		Not in home = 1
20.	Place of Work	In Province = 0
		Out of Province = 1

Column	Category	Codes
		Seasonally out = 2
21	Where work out	Hawaii = 0
		Cagayan = 1
		Manila = 2
		USA = 3
		Guam = 4
		Other = 5
22	Where worked out	Same codes as column 21
		Never out = 6
23	When migrated in	As child = 0
		Before marriage (as single person) = 1
		At marriage = 2
		After marriage (as or with family) = 3
		After family grown = 4
		Unknown = 5
24-25	Occupation when worked out (if another when home	Use code for 51-52
26	Marital status	Single = 0
		Married = 1
		Widowed = 2
		Divorced = 3
		Unknown = 4

Column	Category	Codes
27	No. of times married	1-9 10 or more = 0
28	No. of living children	1-9 10 or more = 0
29	No. of dead children	1-9 10 or more = 0
30-31	Age at first birth	00-98 Cannot be estimated = 99
32-33	Age at most recent birth	00-98 Cannot be estimated = 99
34	No. of twin births	0-9
36-37	Age at death	00-98 Over 98 = 99
38-39	Year of death	Begin with 1859 = 00 End with 1958 = 99
40-41	Nosology	Typhoid = 00 Malaria = 01 Burtong (smallpox) = 02 Leprosy = 03 Dysentary = 04 Bronchitis = 05 Influenza = 06 Tuberculosis = 07 Heart Attack = 08 Hemorrhage = 09

Column	Category	Codes	
		Stomach Ache	= 11
		Menstrual Trouble	= 12
		Weakness	= 13
		Stillbirth	= 14
		War Nerves	= 15
		Coughing	= 16
		Appendicitis	= 17
		Birth Difficulty	= 18
		Headache	= 19
		World War II	= 20
		Accident	= 21
		Drowning	= 22
		Makadalapus (spirit-caused)	= 23
		Unknown	= 24
45	Status in House	Present in house	= 0
		In house, absent	= 1
		Present, non-relative	= 2
		Dead spouse of househead	= 3
		Dead child of someone in house	= 4
		Relative not in house or province expected to support household	= 5

Column	Category	Codes
		Emigrant child, not due to marriage = 6
47	Total Living in House	1-9 10 or more = 0
48-49	Family Type	Simple (nuclear) = 00 00 with ascendant relatives: of husband = 01 of wife = 02 00 with siblings: of husband = 03 of wife = 04 00 with 1 distant relative = 05 00 with 2 or more distant relatives = 06 00 with non-relatives = 07 00 with other relatives and non-relatives = 08 Joint (3 lineal generations) = 09 Joint with 2 or more married siblings = 10 Unmarried persons = 11 11 with relatives = 12 11 with relatives and non-relatives = 13

Column	Category	Codes	
		01 and 02	= 14
		03 and 04	= 15
		05 and 06	= 16
		01 or 02 and 03 or 04	= 17
		01 or 02 and 05 or 06	= 18
		03 or 04 and 05 or 06	= 19
51-52	Occupation	Farmer	= 00
		Housekeeper	= 01
		Laborer (sugar)	= 02
		Fishing	= 03
		Harvester	= 04
		Lavandera	= 05
		Salting	= 06
		Rice Planting	= 07
		Laborer	= 08
		Gardener	= 09
		Housegirl	= 10
		Waitress	= 11
		Tailor	= 12
		Irrigator	= 13
		Waiter	= 14
		Amah (Nanny)	= 15
		Carpenter	= 16
		Armed Services	= 17
		Weaving	= 18

Column	Category	Codes
		Student (above 6th grade) = 19
		Salesgirl = 20
		Guard = 21
		Storekeeper = 22
		Hair culture = 23
		Sexton = 24
		Teacher = 25
		Not known = 26
		Wife of worker, her status unknown = 27
		Retired or old = 28
		Fishing & farming = 31
		Tends cattle = 32
		Harvester & planter = 33
		Housekeeper & salting = 34
		Planter & salting = 35
		Tailor & hair culture = 36
		Housekeeper & weaving (for market) = 37
		Farming & carpenter = 38
		Housekeeper & Tailor = 39
53	Tenancy	Not tenant = 0
		Partial tenant = 1
		Tenant and landlord = 2
		Total tenant = 3

Column	Category	Codes	
		Partial landlord	= 4
		Total landlord	= 5
		Part owner	= 6
		Owner	= 7
54	Type of House Structure	Unknown	=
		Cogon-siwali:	
		small	= 1
		average	= 2
		large	= 3
		Wooden	= 4
56	Fishing Gear Owned	None	= 0
		Some	= 1
		Substantial	= 2
57	Income from Fishing in Pesos per month	Home use	= 0
		0-4	= 1
		5-9	= 2
		10-14	= 3
		15-19	= 4
		20-24	= 5
		25-29	= 6
		30-39	= 7
		40-49	= 8
		Over 49	= 9
58.	Value of Fishing Gear in Pesos	0-29	= 0
		30-59	= 1

Column	Category	Codes
		60-89 = 2
		90-119 = 3
		120-149 = 4
		150-199 = 5
		200-249 = 6
		250-299 = 7
		300-399 = 8
		Over 399 = 9
59	Fishing lot membership	Yes = 0
		No = 1
		Unknown = 2
61	Value of Land-holdings in Pesos	Some, amount unknown = 0
		0-49 = 1
		50-99 = 2
		100-199 = 3
		200-299 = 4
		300-499 = 5
		500-999 = 6
		1000-1999 = 7
		2000-3999 = 8
		4000 and over = 9
62	House ownership	Own = 0
		Rent = 1
		Tenant = 2
		Unknown = 3

Column	Category	Codes
		Relative's (no charge) = 4
63-64	No. of Fields & Lots Owned (or worked if can expect to inherit)	00-98 Unknown = 99
66	Value of animials in Pesos	0-99 = 0 100-199 = 1 200-299 = 2 300-399 = 3 400-499 = 4 500-599 = 5 600-699 = 6 700-799 = 7 800-899 = 8 Over 899 = 9
67-68	No. of animals	00-98 Unknown = 99
69	Animal Tenancy	None = 0 Part, non-owner, under 1/2 = 1 Part, non-owner, over 1/2 = 2 Part, owner, under 1/2 = 3 Part, owner, over 1/2 = 4 All = 5 Owner and non-owner = 6

Column	Category	Codes
71-72	Diversity of Economic activity (no. of kinds of trees, crops & animals raised)	00-98 Unknown = 99
73-74	Income in no. of Cavans	00-98 Unknown = 99
75	Barter Activity	Yes, all income = 0 Yes, part income = 1 None = 2 Unknown = 3
76	Monetary income in Pesos per Month	Some, amount unknown = 0 0-4 = 1 5-9 = 2 10-14 = 3 15-19 = 4 20-24 = 5 25- 39 = 6 40- 59 = 7 60- 99 = 8 Over 99 = 9
77	Reliability of Economic Information	Unreliable = 0 Relatively unreliable = 1 Relatively reliable = 2 Reliable = 3

Column	Category	Codes
		Unknown = 4

APPENDIX C

INFORMATION CODED FOR INDIVIDUALS

Appendix C contains a printout of columns one through fifty-two for each of the 667 Suban census data cards.

```
01001 00210936 20100 530211                          00300 00
01002 10180939 20200 63  111116180                   01    01
01003 00000957 2000      0                           01
01004 01   956  01                        005607     4
02005 10550902 30000 6   213 16200                   00809 01
02006 01   900  03   65   1              454700     3
02007 00390918 30000 6   11                          01    31
02008 10350922 30000 6   212120240                   01    01
02009 10350922 30000 6   112 31330                   01    27
02010 10040953 3000      0                           01
02011 10020955 3000      0                           01
02012 01   942  00                        004207     4
02013 10130944 3000      0                           01
02014 00110946 3000      0                           01
03015 10500907 20400 63  213 23330                   00200 18
03016 01   905  04   6    1              384320     3
03017 00170940 20400 63  0                           01    04
04018 00400917 20000 6   11                          00200 00
04019 10350922 20000 6   11 230310                   01    01
04020 01   952  00                        015301     4
04021 01   953  00                        005301     4
05022 10570900 20000 6   0                           00111 01
06023 00440913 20000 6   11                          00800 31
06024 10530904 20000 6   126230440                   01    01
06025 01   934  00                        104420     4
06026 01   935  00                        094420     4
06027 00180939 20000 6   0                           01    31
06028 10150942 2000      0                           01
06029 00130944 2000      0                           01
06030 10110946 2000      0                           01
06031 10090948 2000      0                           01
06032 10200937  001122   0                           5     05
07033 00500907 10000 0   11                          00500 32
07034 10400917 10600 62  114120280                   01    01
07035 00180939 1000211   0                           01    00
07036 00160941 10000 6   0                           01    19
07037 10140943 1000      0                           01
07038 11   945  00                        004518     4
08039 00320925 10700 62  11                          00500 33
08040 10330924 10000 6   115121320                   01    34
08041 00120945 1000      0                           01
08042 00060951 1000      0                           01
08043 10000957 1000      0                           01
08044 01   954  00                        005407     4
09045 10650892 10000 6   218 18360                   00412 06
09046 01   890  00   6    1              504009     3
09047 10400917 10000 6   0                           01    06
09048 10180939 1000      0                           01
09049 10080949 1000      0                           01
10050 10500907 10700 63  212120340                   00312 34
10051 01   905  07    3   1              505510     3
10052 00160941 10702553  0                           01    04
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10053 11   935  07    3   1          124711   4
10054 00070950 1000       0                   01
11055 00320925 10700 62   11                  00800 35
11056 10310926 10000 6    117 14310           01    01
11057 00170940 10000 6    0                   01    35
11058 10140943 1000       0                   01
11059 10070950 1000       0                   01
11060 00050952 1000       0                   01
11061 10040953 1000       0                   01
11062 00000957 1000       0                   01
12063 00620895 20000 6    21                  00312 31
12064 11   902  08   62    17123410 505212     3
12065 11   929  00                285700      4
12066 00260931 20000 6    0                   01    31
12067 00030954 2000       0                   01
13068 00320925 2000255 0411                   00200 03
13069 10220935 20400 62   11 219220           01    01
13070 11   954  00                035707      4
13071 01   957  00                005723      4
14072 10800877 30000 6    212222310           00801 01
14073 01   875  00          1     805513      3
14074 01   899  00                050407      4
14075 01   903  00                010407      4
14076 00490908 30000 6    11                  01    31
14077 10350922 30000 6    115 25340           01    18
14078 00100947 3000       0                   01
14079 10080949 3000       0                   01
14080 00060951 3000       0                   01
14081 10040953 3000       0                   01
14082 00010956 3000       0                   01
15083 10380919 30000 6    0 3021260           00400 01
15084 00150942 30000 6    0                   01    03
15085 10170940 3000       0                   01
15086 00120945 3000       0                   01
16087 00520905 30000 0 0812                   00500 31
16088 10370920 30000 6    112 22230           01    01
16089 00140943 3000       0                   01
16090 10150942 3000       0                   01
16091 10210936 3000       0                   01
17092 10520905 20400 65   0                   00312 01
17093 00100947 2000       0                   01
17094 00070950 2000       0                   01
18095 00240933 20000 6    11                  00400 00
18096 10260931 20400 62   112 21230           01    01
18097 00050952 2000       0                   01
18098 00030954 2000       0                   01
19099 10600897 20500 62   212133370           00200 01
19100 01   895  00   6     1         454000   3
19101 01   930  00                033305      4
19102 00250932 20000 6    0                   01    00
20103 00640893 20000 6    21                  00818 00
20104 11   883  08   62    17116360 654800     3
```

```
20105 10582899 20000 6    0                          01     01
20106 11    916  00                        153104    4
20107 00702887 20000 6    0                          01     00
20108 00302927 20000 6    11                         01     31
20109 00192938 20000 6    0                          01     26
20110 10252932 20000 6    111 24240                  01     27
20111 00142943 2000       0                          01
20112 00002957 2000       0                          01
20113 00502907  001130    1                          6      08
21114 00310926 20000 6    11                         00200  00
21115 10280929 20300 62   11 224250                  01     01
21116 11    953  00                        005407    4
21117 01    954  00                        005407    4
22118 00312926 20400 60   11                         00500  00
22119 10242933 20000 6    113 17220                  01     01
22120 10072950 2000       0                          01
22121 00052952 2000       0                          01
22122 10022955 2000       0                          01
23123 00480909 20000 6    11                         00800  00
23124 10450912 20000 6    116 21370                  01     01
23125 00240933 20000 6    0                          01     00
23126 00190938 20000 6    0                          01     00
23127 00170940 2000       0                          01
23128 00140943 2000       0                          01
23129 00110946 2000       0                          01
23130 00080949 2000       0                          01
24131 00470910 10000 0 0211                          00703  00
24132 10330924 10500 62   114 25310                  01     01
24133 10080949 1000       0                          01
24134 00060951 1000       0                          01
24135 00040953 1000       0                          01
24136 00020955 1000       0                          01
24137 00340923 10000 6    0                          01     00
25138 00700887 00000 6    12                         00509  28
25139 11    887  00    6     15417350 402708    3
25140 11    909  00                        031207    4
25141 11    906  00                        061207    4
25142 01    905  00                        071209    4
25143 11    904  00                        081207    4
25144 10450912 00000 6    111 32320                  01     01
25145 10650892 00000 6    12                         01     01
25146 00130944 0000       0                          01
25147 00040953 0000       0                          01
25148 00470910  001122    11                         11     09
26149 00280929 00000 6    11                         00200  00
26150 10280929 00000 2 0511 126260                   01     01
26151 01    955  00                        005514    4
27152 00380919 30000 6    11                         00702  31
27153 10420915 30000 6    114125390                  01     01
27154 00170940 30000 6    0                          01     31
27155 10140943 3000       0                          01
27156 00100947 3000       0                          01
```

```
27157 00050952 3000      0                          01
27158 01    954  00                    025607      4
27159 10750882 30000 6   21                         01     28
28160 00360921 30000 6   11                         00500  31
28161 10350922 30000 6   113 28330                  01     01
28162 00070950 3000      0                          01
28163 10050952 3000      0                          01
28164 00020955 3000      0                          01
29165 00440913 30000 6   11                         00600  31
29166 10380919 30000 6   114123350                  01     01
29167 11    942  00                    014307      4
29168 00120945 3000      0                          01
29169 10100947 3000      0                          01
29170 10060951 3000      0                          01
29171 10030954 3000      0                          01
30172 00500907 30000 6   11                         00603  00
30173 10450912 30000 6   115216350                  01     01
30174 01    928  00                    144200      4
30175 00250932 30000 6   0                          01     00
30176 01    937  00                    023807      4
30177 10150942  001122   0                          6      10
30178 00170940 30000 6   0                          01     31
30179 10100947 3000      0                          01
30180 10660891 30000 6   4                          01     01
31181 10500907 30000 6   215215320                  00400  01
31182 01    902  00        1           464800      3
31183 10350922 30000 6   0                          01     01
31184 00330924 30000 6   0                          01     31
31185 10300927  001133   11                         11     01
31186 10280929  001122   0                          6      11
31187 01    932  00                    053707      4
31188 00210936 30000 6   0                          01     31
31189 01    938  00                    044207      4
32190 10700887 30000 6   218215470                  00500  01
32191 01    882  00    6    1           705224      3
32192 10550902 30000 6   0                          01     01
32193 10430914 30000 6   0                          01     18
32194 10390918 3001122   0                          6      01
32195 01    921  00                    214207      4
32196 01    924  00                    204408      4
32197 10300927 3001122   0                          6      01
32198 00280929 30000 6   0                          01     31
32199 10250932 3000122   0                          11     36
32200 00230934 30000 6   0                          01     31
33201 00532904 20000 6   11                         00500  00
33202 10432914 20800 62  114324350                  01     01
33203 00192938 20000 6   0                          01     00
33204 11    940  00                    004014      4
33205 00162941 2000      0                          01
33206 00122945 2000      0                          01
33207 11    947  00                    004714      4
33208 11    949  00                    004914      4
```

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34209 00290928 00800 63   11                          00915 03
34210 10290928 00000 6    115 21290                   01    37
34211 10080949 0080    0  0                           01
34212 10060951 0080    0  0                           01
34213 00040953 0080    0  0                           01
34214 10020955 0080    0  0                           01
34215 00000957 0000       0                           01
34216 10190938 00800 61   0                           01    01
34217 00200937 0000255 080                            01    31
35218 00490908 10000 0 1321                           00200 00
35219 11    910   08    62    12127310 354515         3
35220 00200937 1001122    0                           6     14
35221 00180939 10000 6    0                           01    00
35222 11    941   00                    034407        4
36223 00452912 10000 0 1311                           00400 00
36224 10392918 10700 62   113 12260                   01    01
36225 00272930  001155    0                           6     19
36226 00172940 1000       0                           01
36227 10132944 1000       0                           01
37228 10600897 10000 6    0                           00413 01
37229 00260931 10000 6    0                           01    00
37230 10120945 1000       0                           01
37231 10120945 1000       0                           21
38232 00900867 10000 6    11                          00405 28
38233 10850872 10700 62   118229500                   01    28
38234 11    905   00                    010607        4
38235 00540903 10000 6    0                           01    00
38236 11    911   00                    152607        4
38237 00230934 10000 6    0                           01    00
39238 00550902 10000 0 0213                           00600 00
39239 10400917 10000 6    114 32380                   01    01
39240 00082949 1000       0                           01
39241 00060951 1000       0                           01
39242 00040953 1000       0                           01
39243 10020955 1000       0                           01    -
40244 00420915 10000 6    11                          00909 38
40245 10350922 10500 62   115 13180                   01    01
40246 10220935 10000 6    113 19220                   01    01
40247 10210936  001122    0                           6     05
40248 10200937  001211    0                           5     04
40249 10180939 1000       0                           01
40250 10170940 1000       0                           01
40251 00230934 11500 6    11                          01    00
40252 10030954 1000       0                           01
40253 10020955 1000       0                           01
40254 00000957 1000       0                           01
41255 00450912 1000255 0211                           00700 00
41256 10420915 10500 62   117223390                   01    01
41257 10190938  001122    0                           5     15
41258 11    942   00                    034511        4
41259 00130944 1000       0                           01
41260 00120945 1000       0                           01
```

```
41261 10090948 1000      0                          01
41262 00080949 1000      0                          01
41263 01   952  00                        005205    4
41264 00030954 1000      0                          01
42265 00350922 10000 6   11                         00700 00
42266 10300927 10900 62  115 19260                  01    01
42267 00110946 1000      0                          01
42268 10090948 1000      0                          01
42269 00070950 1000      0                          01
42270 00050952 1000      0                          01
42271 00040953 1000      0                          01
43272 00560901 10000 0 0211                         00706 00
43273 10540903 10000 6   112117400                  01    34
43274 01   920  00                        244420    4
43275 00140943 1000      0                          01
43276 00260931 10000 6   11                         01    00
43277 10240933 10000 6   112 21240                  01    27
43278 10030954 1000      0                          01
43279 10000957 1000      0                          01
44280 00500907 10000 6   12                         00700 38
44281 10350922 10800 62  115 15340                  01    01
44282 00200937 10000 6   0                          01    00
44283 10180939 1000      0                          01
44284 00120945 1000      0                          01
44285 10090948 1000      0                          01
44286 10010956 1000      0                          01
45287 00480909 10000 6   11                         00600 00
45288 10460911 10000 6   110 18390                  01    34
45289 10250932  001122   0                          5     10
45290 10240933  001122   0                          5     10
45291 10180939  001122   0                          5     10
45292 10150942 10000 6   0                          01    34
45293 10120945 1000      0                          01
45294 10090948 1000      0                          01
45295 00070950 1000      0                          01
46296 00630894 10000 6   11                         00305 00
46297 10620895 10700 62  114417480                  01    01
46298 01   927  00                        174420    4
46299 01   930  00                        154520    4
46300 11   931  00                        134412    4
46301 11   933  00                        033604    4
46302 00180939 10000 6   0                          01    00
47303 00360921 10000 6   11                         00600 00
47304 10340923 10700 62  114419330                  01    01
47305 00150942 1000      0                          01
47306 01   945  00                        014604    4
47307 00100947 1000      0                          01
47308 00070950 1000      0                          01
47309 10010956 1000      0                          01
48310 00420915 20000 6   11                         00400 00
48311 10400917 20000 6   112 34360                  01    39
48312 10060951 2000      0                          01
```

```
48313 10040953 2000       0                          01
49314 00222935 20000 5 0211                          00300 31
49315 10202937 20400 62  111 20200                   01    01
49316 10002957 2000       0                          01
50317 00750882 20000 6   21                          00605 00
50318 11   888  00         16 14390 402807  3
50319 00380919 20000 6   11                          01    31
50320 00350922 20000 6   11                          01    31
50321 00300927 20000 6   0                           01    31
50322 10550902 20000 6   0                           01    01
50323 10200937 21500 6   11                          01    01
51324 10650892 20000 6   215220400                   00500 01
51325 01   890  00         1          473702  3
51326 10380919 20000 6   0                           01    26
51327 01   912  00                    071902  4
51328 00420915 20000 6   0                           01    26
51329 11   917  00                    021902  4
51330 00380919  001122   1                           6     17
51331 10330924 20000 6   0                           01    01
51332 00250932 20000 6   0                           01    00
52333 00500907 20000 6   11                          00604 00
52334 10280929 20500 62  113 21280                   01    01
52335 00070950 2000       0                          01
52336 10010956 2000       0                          01
52337 00000957 2000       0                          01
52338 10200937 20500 61  0                           01    01
53339 10630894 20000 6   219118371                   00717 01
53340 01   892  00         1          635500  3
53341 11   918  00                    193712  4
53342 00320925 20000 6   0                           01    31
53343 00300927 20000 6   0                           01    31
53344 00280929 20000 6   11                          01    31
53345 00260931 20000 6   0                           01    31
53346 10210936 21500 6   111 20200                   01    27
53347 10010956 2000       0                          01    -
54348 00340923 20000 6   11                          00200 31
54349 10220935 20400 62  11 120200                   01    01
54350 01   955  00                    005607  4
55351 00330924 20000 6   11                          00600 31
55352 10240933 20400 62  114 17220                   01    01
55353 10070950 2000       0                          01
55354 00050952 2000       0                          01
55355 10040953 2000       0                          01
55356 10020955 2000       0                          01
56357 00355922 11600 62  11                          00600 35
56358 10335924 10000 6   115 25330                   01    01
56359 00065951 1000       0                          01
56360 00055952 1000       0                          01
56361 10035954 1000       0                          01
56362 00005957 1000       0                          01
57363 10630894 20000 6   212222330                   00212 04
57364 01   882  01    5   1          604520  3
```

```
57365 01    916  15          1          334909    4
57366 11    921  15                     204112    4
57367 10300929  151122    11                      5       05
57368 00100947 2150        0                       01
58369 00512906 0000255 0411                        00007 03
58370 10432914 00000 6    117322410                01      01
58371 00212936 0000251 040                         01      03
58372 00172940 0000255 040                         01      03
58373 11    941  00                     044504    4
58374 00142943 0000        0                       01
58375 01    944  00                     014504    4
58376 10082949 0000        0                       01
58377 01    951  00                     015209    4
58378 10032954 0000        0                       01
58379 00022955 0000        0                       01
58380 10702887 0150        0                       21      26
58381 10452912 0150        0                       21      26
59382 00520905 10700 63    11                      00400 00
59383 10510906 10500 63    115226400               01      01
59384 01    934  00                     003507    4
59385 10200937  001122    0                       5       10
59386 11    938  00                     003807    4
59387 10180939  001122    0                       5       10
59388 00150942 10000 6     0                       01      00
59389 10110946 1000        0                       01
60390 00300927 10000 6     11                      00400 00
60391 10240933 10000 6     112 19240               01      01
60392 10050952 1000        0                       01
60393 10000958 1000        0                       01
61394 00350922 30000 6     11                      00500 31
61395 10370920 30000 6     113 26360               01      01
61396 10110946 3000        0                       01
61397 00070950 3000        0                       01
61398 00010956 3000        0                       01
62399 10702887 31000 62    212 18220               00200 01
62400 01    885  06     2    1          554007    3
62401 00522905  001100    0                       6       08
62402 10482909 30000 6     311124270               01      01
62403 10212936  001100    0                       6       19
63404 00612896 00000 6     21                      00700 03
63405 11    904  00          16123390 404404    3
63406 01    927  00                     113821    4
63407 00282929 0000211 040                         01      03
63408 00262931 0000211 040                         01      03
63409 00252932 0000211 040                         01      03
63410 00232934 0000215 040                         01      03
63411 00172940 0000211 040                         01      03
63412 00142943 00000 6     0                       01      03
64413 00510906 20400 63    11                      00400 00
64414 10580899 20400 63    114333400               01      01
64415 00250932 20400 63    11                      01      26
64416 10230934  0411223    0                       5       20
```

```
64417 11    935  04                    023707    4
64418 11    936  04                    023807    4
64419 11    938  04                    094707    4
64420 00180939 20400 63  0                        01      00
65421 00592898 30000 6   12                       00900 31
65422 10422915 31500 6   127324411                01      01
65423 00182939 30000 6   0                        01      31
65424 00122945 3000      0                        01
65425 10112946 3000      0                        01
65426 00102947 3000      0                        01
65427 10082949 3000      0                        01
65428 10062951 3000      0                        01
65429 00052952 3000      0                        01
65430 01    954  00                    005424    4
65431 01    954  00                    005424    4
65432 11    956  00                    005624    4
66433 00252932 30000 6   11                       00501 21
66434 10242933 31100 2205112 22230                01      01
66435 00022955 3000      0                        01
66436 10002957 3000      0                        01
66437 00992832 30000 6   21                       01      00
67438 00450912 20000 6   12                       00500 31
67439 11    909  00      12423340 354420    3
67440 01    932  00                    124420    4
67441 01    935  00                    094420    4
67442 01    937  00                    074420    4
67443 11    940  00                    004007    4
67444 00160941 20000 6   0                        01      31
67445 00120945 2000      0                        01
67446 10090948 2000      0                        01
67447 10510906 20000 6   112 39420                01      01
68448 00580899 30000 6   11                       00300 31
68449 10570900 30000 6   116120390                01      01
68450 01    920  00                    254520    4
68451 00240933  001122   11                       6       17
68452 00180939 30000 6   0                        01      19
69453 00493908 30000 6   21                       00612 31
69454 11    912  00       1 228300 304218    3
69455 01    940  00                    024204    4
69456 01    942  00                    004204    4
69457 10553902 30000 6   0                        01      22
69458 00183939 30000 6   0                        01      31
69459 10153942 3000222   0                        01      20
69460 00213936 30000 6   11                       01      31
69461 10213936 30000 6   11                       01      27
70462 10450912 30000 6   0                        00111 01
71463 10400917 30100 62  213 19250                00300 01
71464 01    897  00       1         454217    3
71465 10210936  001122   0                        6       20
71466 10180939 30000 6   0                        01      23
71467 00150942 3000      0                        01      31
72468 00500907 30000 0 0812                       00300 31
```

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72469 10542903 31200 0305111 43430                    01     01
72470 00110946 3110   0  0                            01
73471 00352922 30000 6   11                           00700 31
73472 10282929 30700 62  115118270                    01     01
73473 11   947  00                    004700          4
73474 00082949 3000      0                            01
73475 00062951 3000      0                            01
73476 10042953 3000      0                            01
73477 10032954 3000      0                            01
73478 00002957 3000      0                            01
74479 00452912 30000 6   11                           00607 31
74480 10402917 30000 6   124120290                    01     01
74481 00202937 30000 5 000                            01     31
74482 11   938  00                    074507          4
74483 00182939 30002 5 080                            01     31
74484 10142943 3000      0                            01
74485 00352922 31500 6   0                            21     25
75486 00700887 30000 6   11                           00505 00
75487 10650892 30000 6   115121410                    01     01
75488 00330924 30000 6   11                           01     31
75489 11   930  00                    013107          4
75490 10240933 30000 6   0                            01
75491 00140943 30000 6   0                            01
76492 10502907 30600 62  317113300                    00710 01
76493 01   927  00                    224907          4
76494 00262931 30000 2 244                            01     31
76495 00222935 30000 6   11                           01     31
76496 00202937 30000 6   11                           01     31
76497 10202937 30000 2 10111 20200                    01     27
76498 00002957 3000      0                            01
76499 10182939 30000 6   11                           01     27
77500 00440913 30000 6   11                           00600 31
77501 10360921 30000 6   114 24350                    01     01
77502 00120945 3000      0                            01
77503 00090948 3000      0                            01
77504 00070950 3000      0                            01
77505 00000957 3000      0                            01
78506 00410916 30000 6   11                           00400 31
78507 10240933 30000 6   112 20240                    01     01
78508 00040953 3000      0                            01
78509 00000957 3000      0                            01
79510 00740883 30000 6   11                           00009 31
79511 10720885 30000 6   117322450                    01     01
79512 10500907 30000 6   0                            01     01
79513 01   909  00         1          334200          4
79514 10450912 30000 6   0                            01     01
79515 01   914  00                    284200          4
79516 00320925 30000 6   11                           01     31
79517 10290928 3001122   0                            11     20
79518 01   930  00                    124200          4
79519 10140943 3000      0                            01
79520 10300927 30000 6   113 24300                    01     27
```

```
79521 10060951 3000       0                          01
79522 00040953 3000       0                          01
79523 00000958 3000       0                          01
80524 00380919 30000 6    11                         00705 31
80525 10400917 30800 62   114 32390                  01    01
80526 10080949 3000       0                          01
80527 10070950 3000       0                          01
80528 00050952 3000       0                          01
80529 10010956 3000       0                          01
80530 10180939 31510 6    0                          11    01
81531 10800877 30800 6    219116400                  00500 01
81532 01   875  00          1          704500         3
81533 10520905 30000 6    0                          01    01
81534 10500907 30000 6    0                          01    01
81535 10480919 30000 6    0                          01    01
81536 01   914  00                     001407         4
81537 00300927 30000 6    0                          01    31
82538 00575900 20000 6    11                         00400 31
82539 10705887 20200 62   116 33550                  01    01
82540 00195938 20000 6    0                          01    31
82541 10155942 20000 6    0                          01    20
83542 00590898 10000 0 0811                          00305 00
83543 10560901 10000 6    115119290                  01    01
83544 00370920  001100    11                         6     08
83545 00350922  001100    11                         6     08
83546 00300928  001122    0                          6     19
83547 01   930  00                     003007         4
83548 10070950 1000       0                          01
84549 00470910 10000 0 0811                          00600 00
84550 10470910 10000 6    116119421                  01    01
84551 10180939  001122    0                          5     01
84552 00150942  001211    0                          11    04
84553 01   945  00                     004514         4
84554 00090948 1000       0                          01
84555 00090948 1000       0                          01
84556 00050952 1000       0                          01
85557 10340923 10000 6    111 22220                  00300 01
85558 00360921  001100    12                         11    08
85559 00120945 1000       0                          01    19
85560 10010956 1000       0                          01
86561 00530904 10000 0 0211                          00800 00
86562 10450912 10000 6    118321430                  01    01
86563 10220935  001122    0                          5     05
86564 11   937  00                     003707         4
86565 10180939 10000 6    0                          01    00
86566 00160941 10000 6    0                          01    00
86567 11   944  00                     014507         4
86568 00100947 1000       0                          01
86569 01   948  00                     004807         4
86570 00070950 1000       0                          01
86571 00060951 1000       0                          01
86572 10020955 1000       0                          01
```

```
87573 10530904 20000 6    211 31310            00111 01
87574 01    901  06    2    1        545508    3
87575 10220935  001122    0                    5     20
88576 00360921 20000 6    11                   00800 31
88577 10230934 21400 65   116 13230           01    01
88578 00100947 2000       0                    01
88579 00090948 2000       0                    01
88580 00080949 2000       0                    01
88581 00050952 2000       0                    01
88582 00030954 2000       0                    01
88583 10000957 2000       0                    01
89584 00352922 20000 6    11                   00400 31
89585 10252932 21400 62   112 21240            01    01
89586 10042953 2000       0                    01
89587 10012956 2000       0                    01
90588 00652892 20000 6    11                   00300 31
90589 10602897 20000 6    113119250            01    01
90590 11    916  00         1        405608    4
90591 10372920 20000 6    0                    01    01
91592 00680889 00000 6    13                   00405 38
91593 10470910 00000 6    127216330            01    01
91594 11    894  07    2    18228380 595300    3
91595 11    915  00         1        405500    3
91596 00350922  001100    11                   6     08
91597 00320925  001100    0                    6     08
91598 01    926  00         1        255100    4
91599 11    931  00                  174800    4
91600 11    932  00                  073904    4
91601 00200937 00000 6    0                    01    00
91602 11    926  00                  002607    4
91603 11    934  00                  033704    4
91604 10140943 0000       11                   01
92605 00295928 0001144    11                   10705 16
92606 10315926 00700 62   114 17260            01    01
92607 00145943 0000       0                    01
92608 00095948 0000       0                    01
92609 00075950 0000       0                    01
92610 10055952 0000       0                    01
92611 10155942 00000 6    11                   01    01
93612 00700887 20400 62   11                   00919 00
93613 10600897 20000 6    117115350            01    01
93614 01    912  00                  001307    4
93615 10420915 20000 6    0                    01    26
93616 00350922 20000 6    0                    01    00
93617 10320925  001122    11                   6     20
93618 10270930  001122    0                    6     01
93619 10250932  001122    0                    6     19
93620 10950862 20000 6    4                    01    28
93621 10650892 20000 6    4                    01    26
93622 10470910 20000 6    4                    01    26
93623 10450912 20000 6    4                    01    26
93624 10050952 2000       0                    01
```

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94625 00440913 20000 6    11                          00300 00
94626 10390918 20000 6    113 32370                   01    01
94627 00020955 2000       0                           01
95628 00400917 20000 6    0                           00512 00
95629 10370920 20000 6    111136370                   01    01
95630 00300927 21500 6    11                          01    00
95631 00010956 2000       0                           01
95632 01   957  00                        005707      4
96663 00550902 20000 0 0811                           00000 00
96634 10450912 20800 62   118 23410                   01    01
96635 00270930 20000 6    0                           01    25
96636 00220935 20000 6    0                           01    00
96637 00210936 20000 6    0                           01    00
96638 00190938 20000 6    0                           01    00
96639 10180939 2000       0                           01
96640 10170940 2000       0                           01
96641 10150942 2000       0                           01
96642 10130944 2000       0                           01
96643 00040953 2000       0                           01
97644 00350922 20000 6    11                          00400 31
97645 10280929 20000 6    112 21230                   01    01
97646 00070950 2000       0                           01
97647 00050951 2000       0                           01
98648 00700887 20000 6    11                          00009 00
98649 10750882 20000 6    117225480                   01    01
98650 00500907  001133    0                           6     08
98651 01   910  00                        102007      4
98652 00450912 20000 6    0                           01    31
98653 10420915 20000 6    0                           01    01
98654 11   919  00          13 24261 284708           4
98655 10300927  001122    0                           6     11
98656 10290928 20000 6    112 23240                   01    27
98657 10270930  001122    0                           6     20
98658 10140943 2000       0                           01
98659 00120945 2000       0                           01
98660 00120945 2000       0                           01
98661 00340923 21500 6    11                          01    31
98662 10060951 2000       0                           01
98663 10050952 2000       0                           01
99664 10500907 20400 63   215 17280                   00300 01
99665 01   905  04    3    1          455000           3
99666 00250932 20402 53   0                           01    02
99667 00220935 20402 53   0                           01    02
```

APPENDIX D

INFORMATION CODED FOR HOUSEHOLDS

Appendix D contains a printout of columns fifty-three through seventy-seven for each of the ninety-nine census data cards with information on Suban households.

```
30 1000 1300 2041 0803212
11 2640 2003 3170 1502263
01 0   1  100 1042 0301210
32 0   1  200 2090 1602212
23 0   1  100 0050 0401212
30 2200  200 5201 2302221
01 1000 0499 5192 0613213
01 0   1  100 0052 0601111
00 0   1  000 1076 1402122
01 00  1  400 0015 0204043
01 0   1  400 0102 0705111
30 2310  000 2040 0902233
00 2540  100  00  0001253
73 2200 3013 4090 1602221
14 2540 0099 4100 2102253
40 1   0 0099 0070 9999204
63 0   1 2101 0054 1000273
61 0   1  409 4160 1502211
70 00  0 0009 1310 1502212
43 00  0 5011 7301 2605211
60 0   1 6012 6380 1304213
30 2010  200 3151 1902210
10 0   1 6018 9271 2210212
13 0   1 3006 6330 1607213
00 0   1  100 2051 0900232
30 0   1  200 4231 1002211
10 2310 0004 5190 1602232
11 2100 0001 6200 1301210
44 2530 1007 4070 1702253
10 1420 4006 3101 2001243
10 1540 2002 7100 1902253
72 2950 5007 9140 2403283
30 1002  008 5110 2402211
60 2970  101 0221 0400293
70 1000 5008 3132 1602212
74 1000 6013 3080 1706213
70 1000 6099 2063 1404212
10 1000 0099 3091 1302211
72 0   1 6016 8330 1706212
10 1000 3003 0122 0804210
70 1000 1012 4140 1408263
70 1000 3005 1151 1102211
14 1000 5002 4083 1209113
12 1000 2002 3051 1302211
10 1000 4003 4060 1402133
74 0   1 6011 2093 1506213
60 0   1 2005 3111 1705211
60 0   1 0409 4180 2105213
31 1200  200 0072 0505223
33 1000  200 5141 2208212
33 0   1  200 9261 1603311
31 0   1  200 4090 1802210
```

```
73 2980 2005 8110 1704283
60 2200 0499 1050 1002223
61 2312 0404 1222 1403233
50 00 1 3199 0042 0402210
01 0  1  100 0042 0701211
00 2750  100 0112 1004263
10 1000 6002 5110 1307223
61 0  1 2405 2232 1603211
11 2202  200 7190 1501221
54 0  1 0004 1190 1102263
03 2990  100 1210 0606283
30 0  1  200 4340 1702223
70 2530 6004 9240 1703253
62 2192 0099 1030 1299283
10 2310 4201 8170 2008233
20 1000 0002 2040 1204202
43 2990 5012 5253 1506273
51 0  1 3001 0050 0801212
41 2320 5007 4190 0802273
74 2960 7005 6210 1805273
30 1000  200 7100 1704211
10 2990 4014 7110 2004293
12 2750 5010 1093 2003263
30 2542  200 4431 1002253
12 2310 0402 3140 1504233
10 1000 1004 1040 1002210
70 2280 7015 7360 2209222
62 2310 0005 5170 1502232
33 2420  000 4103 1703243
30 2422  200 2163 2702243
74 1000 6013 6150 1108113
74 1000 6010 4331 1306212
54 0  1 5002 0064 0406213
73 1000 6010 8120 1408212
00 0  1  100 0070 0700253
31 2310  200 0082 1101231
31 2310  200 1062 1601232
30 2210  200 1052 1501222
30 0  1  200 2142 1501222
33 2100  200 9650 2604211
30 0  1  200 6481 2005213
63 0  1 0418 9390 2114213
70 0  1 6015 9410 2110212
30 1000  000 2070 1999214
33 1000  200 6110 2203210
30 1000  200 2270 0602263
```